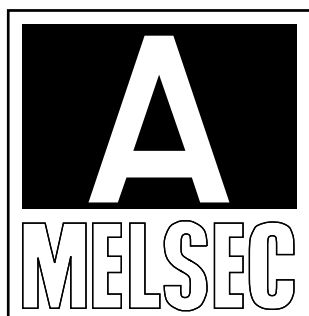


mitsubishi

Control & Communication Link System Master/Local Module

type AJ61BT11/A1SJ61BT11 User's Manual



Mitsubishi Programmable Logic Controller

• SAFETY PRECAUTIONS •

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual.

Also pay careful attention to safety and handle the module properly. These precautions apply only to Mitsubishi equipment. Refer to the user's manual of the CPU module to use for a description of the PLC system safety precautions.


These • SAFETY PRECAUTIONS • classify the safety precautions into two categories: "DANGER" and "CAUTION".

 **DANGER**

Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.

 **CAUTION**

Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by  CAUTION may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

[DESIGN PRECAUTIONS]

DANGER

- Read Chapter 5 in this manual carefully for status of each station when the PC CPU has stopped its operation and when a communication error occurred in the data link. Configure an interlocking circuit in a sequence program using the communication status information (SB, SW) so that the safety of the overall system is always maintained. Accident may occur due to output error or malfunctioning.
- An error is not detected by the master station nor local station when a station specified as an error-invalid station is in a communication error status.

CAUTION

- Do not bundle, on install, the control cables and communication cables with, or near, main circuit and power cables. Keep them at least 100mm (3.9 inch) away from such cables. Noise may cause erroneous operation.

[INSTALLATION PRECAUTIONS]

CAUTION

- Use the PC in the environment given in the general specifications section of this manual. Using the PC outside the range of the general specifications may result in electric shock, fire, or erroneous operation or may damage or degrade the product.
- Insert the tabs at the bottom of the module into the holes in the base unit before installing the module. (Modules in AnS series, make sure screws are securely tightened to base unit with specified torques.)
Improper installation may cause erroneous operation, accidents, or the module to fall out.
- Do not directly touch the module's conductive parts or electronic components.
Doing so could cause malfunction or trouble in the module.

[PRECAUTIONS REGARDING WIRING]

DANGER

- Before beginning any installation or wiring work, make sure all phases of the power supply have been obstructed from the outside. Failing to completely shut out the power supply phases could cause electrical shock and/or damage to the product.
- Following installation or wiring work, when turning on the power supply and operating the equipment, make sure the terminal cover provided as an accessory has been attached to the product.

[WIRING PRECAUTIONS]

CAUTION

- Tighten the terminal screws by the specified torque.
Loose terminal screws may cause a short circuit or erroneous operation.
- Be sure that cuttings, wire chips, or other foreign matter do not enter the module.
Foreign matter may start a fire or cause an accident or erroneous operation.
- Be sure to fix communication cables and power cables leading from the module by placing them in the duct or clamping them. Cables not placed in the duct or without clamping may hang or shift, allowing them to be accidentally pulled, which may result in a malfunction or damage to the module and cable.
- When detaching the communication cable or power cable from the module, do not pull the cable portion. For cables with connectors, hold the connector at the junction to the module, then detach it. For connectors without connectors, first loosen the screw at the junction, then detach the cable.
Pulling the cable portion while it is connected to the module may cause a malfunction or damage to the module and cable.

[STARTING AND MAINTENANCE PRECAUTIONS]

CAUTION

- Do not touch live terminals.
It may cause erroneous operation.
- Turn off the power before cleaning the module or retightening the screws. Doing this work while the power is on may damage the module or cause erroneous operation.
- Do not disassemble or rebuild the module.
It may cause accidents, erroneous operation, injury, or fire.
- Turn off the power before mounting and dismounting the module.
Mounting or dismounting the module while the power is on may damage the module or cause erroneous operation.

[DISPOSAL PRECAUTIONS]

CAUTION

- When disposing of this product, handle it as industrial waste.

Revisions

*The manual number is noted at the lower left of the back cover.

Print Date	*Manual Number	Revision
Nov. 1996	IB (NA)-66721-A	First printing
Jan. 1997	IB (NA)-66721-B	<div>Addition</div> <p>Section 3.2.1, 4.12.3, 13.2</p> <div>Correction</div> <p>Chapter 1, Section 1.1, 3.2, 3.4.1, 7.3, 7.6.3, 8.3.2, 13.1, 13.5.8</p>
Aug. 1997	IB (NA)-66721-C	<div>Addition</div> <p>Section 1.1, 5.3.4, 5.4, Chapter 14, 15, 16</p> <div>Correction</div> <p>Section 1.4, 1.5, 2.1, 2.2.1, 2.2.3, 3.2, 3.2.1, 3.4.1, 3.4.2, 5.1, 7.1, 7.2.1, 7.3, 7.5, 7.6.1, 7.6.3, 7.6.4, 7.7.1, 7.7.2, 7.8</p>
Jan. 1998	IB (NA)-66721-D	<div>Addition model</div> <p>Section 1.4, 2.2.3</p> <div>Correction</div> <p>Section 1.1, 3.3, 3.4.1, 3.5.1, 3.5.2, 4.3, 4.5, 5.2, 7.6.4, 13.1, Chapter 14, 15.1, 15.2.1, 15.6, 15.6.1, 15.6.3, 15.6.4, 15.6.5, 15.6.10, 16.2.3, App2</p>
Mar. 2000	IB (NA)-66721-E	<div>Addition model</div> <p>Section 2.2.3</p> <div>Addition</div> <p>Section 7.6, 15.7</p> <div>Correction</div> <p>SAFETY PRECAUTIONS, Section 1.1, 1.5, 3.3, 3.5.1, 5.1, 5.2, 5.4.3, 7.3, 7.5, 8.3.2, 10.2.2, 12.2.2, 13.3, Chapter 14, Section 15.1, 15.2.1, 15.5.2, 15.5.4, 15.5.5, 15.6, 15.8, Chapter 16</p>
Jul. 2000	IB (NA)-66721-F	<div>Addition</div> <p>Section 2.2.4, 3.2.2</p> <div>Correction</div> <p>Section 1.4, 2.2.1, 3.2, 3.2.1, 3.3, 3.4.2, 3.5.1, 7.3, 7.6.2, 7.7.4, 8.3.1, 9.1.1, 10.1.1, 10.2.2, 11.1.1, 11.1.2, 12.1.1, 12.1.4, 15.2.1, App1.1, App1.2</p>
Jul. 2001	IB (NA)-66721-G	<div>Addition</div> <p>Section 8.2</p> <div>Correction</div> <p>Section 2.2.3, 3.4.1, 3.4.2, 4.12.1, 5.4, 5.4.1, 5.4.2, 5.4.3, 7.2.1, 7.3, 7.5, 8.4.2, 9.1.1, 9.2.1, 10.1.1, 10.2.1, 11.1.1, 11.1.2, 11.2.1, 12.1.1, 12.1.4, 12.2.1, 13.1, 13.3, 13.4.2, 13.4.3, Chapter 14, Section 15.1, 15.2.1, 15.6, 15.7.1</p>

Japanese Manual Version SH-3603-I

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Print Date	*Manual Number	Revision
Jul. 2002	IB (NA)-66721-H	<div>Correction</div> Section 2.2.3, 3.3, 3.4.2, 4.10, 8.1, 13.3, 15.6
Oct. 2002	IB (NA)-66721-I	<div>Correction</div> Section 3.1, 3.5.2

INTRODUCTION

Thank you for choosing a Mitsubishi MELSEC-A Series General Purpose Programmable Controller.

Before using your new PC, please read this manual thoroughly to gain an understanding of its functions so you can use it properly.

Please forward a copy of this manual to the end user.

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About This Manual

The following are manuals related to this product.

Request for the manuals as needed according to the chart below.

Related Manuals

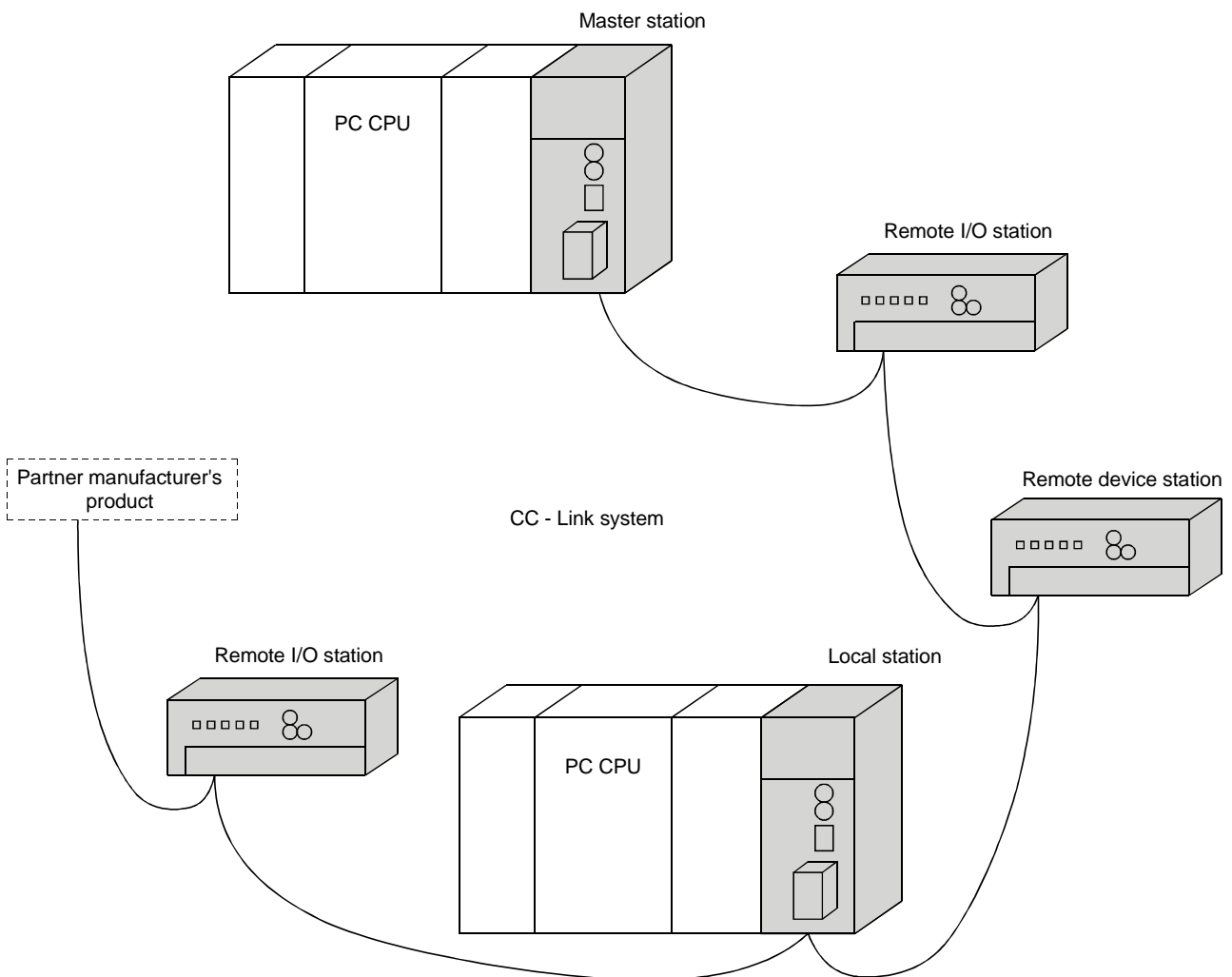
Manual Name	Manual No. (Type code)
AnSHCPU/AnACPU/AnUCPU Programing Manual (Dedicated instructions) Describes the commands that were extended for AnSHCPU/AnACPU/AnUCPU. (Sold separately)	IB-66251 (13J742)

1. Overview

The overview of the Control & Communication Link system (abbreviated as CC-Link from here on) is described in this chapter.

CC-Link is...

- ① By distributing each module to the equipment device such as the conveyor line and machine devices, the wiring conservation of the entire system can be accomplished.
- ② Simple, high-speed communication can be accomplished with modules that handle on/off data such as I/O or numeric data.
- ③ By connecting multiple PC CPUs, a simple distributed system can be configured.
- ④ Connections can be made to different types of devices made by partner manufacturers, giving flexibility to the system.



- Master station..... Station which controls the remote I/O station, remote device station, and local stations
- Remote I/O station Remote station which handles only on/off data
- Remote device station Remote station which handles both on/off data and numeric data
- Local station Station which has a CPU and can communicate with the master station and other local stations

After unpacking, please check to make sure the following components have been included.

Product name		Quantity
AJ61BT11 Control & Communication Link System Master-Local Module	AJ61BT11 main unit	1
	AJ61BT11 CC-Link System Master-Local Module User's Manual (Hardware)	1
	Terminating resistance 110 Ω , 1/2 W (All brown)	2
	Terminating resistance 130 Ω , 1/2 W (Brown, orange, brown)	2
A1SJ61BT11 Control & Communication Link System Master-Local Module	A1SJ61BT11 main unit	1
	A1SJ61BT11 CC-Link System Master-Local Module User's Manual (Hardware)	1
	Terminating resistance 110 Ω , 1/2 W (All brown)	2
	Terminating resistance 130 Ω , 1/2 W (Brown, orange, brown)	2

1.1 How to Use This Manual

The master-local module has the following functions added from the function version B or later. The detailed descriptions of the additional functions are provided in Chapter 14 or later.

(1) Scan synchronous function

Link scan can be executed synchronized with the sequence scan.

(2) Standby master function

With this function, the data link can be continuously executed even if an error occurs in the master station, by automatically switching to the standby master station.

(3) Dedicated instructions

Transient transmission with the intelligent device and local station is possible. In addition, read/write of data with handshake to/from the remote device is feasible.

(4) Temporary error invalid station specification function

By specifying the corresponding remote station as a temporary error invalid station, an error is not detected even if the module is replaced while in communication.

(5) Parameter registration function

Parameters such as total number of connected stations and station information can be set using dedicated instructions.

(6) Automatic refresh function

Data transferred by cyclic transmissions, such as RX and RY, can be refreshed by the END processing to a desired device, when set up with the dedicated instruction.

(7) Dedicated instruction (software version J or later)

Reading and writing of device with respect to the CPU of the specified station are possible.

(8) Remote I/O net mode (applicable to software version P or later)

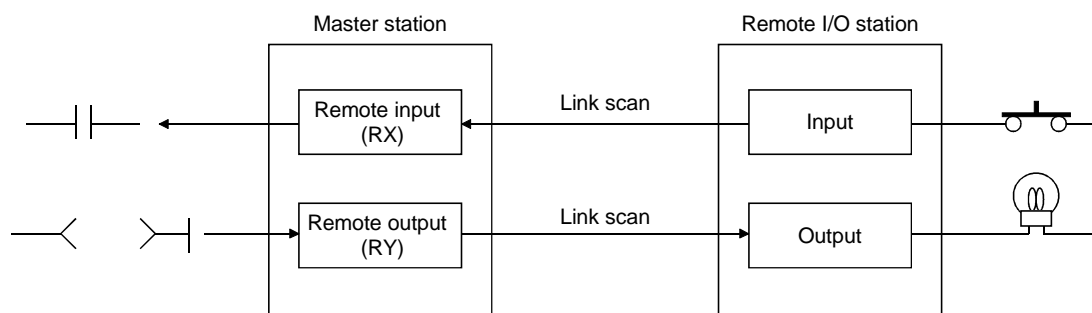
When the system is configured only with the master station and remote I/O stations, if the remote I/O net mode is used, the setting of the network parameters will be unnecessary and the link scanning time will be shortened.

1.2 Characteristics

The characteristics of the CC-Link are described below:

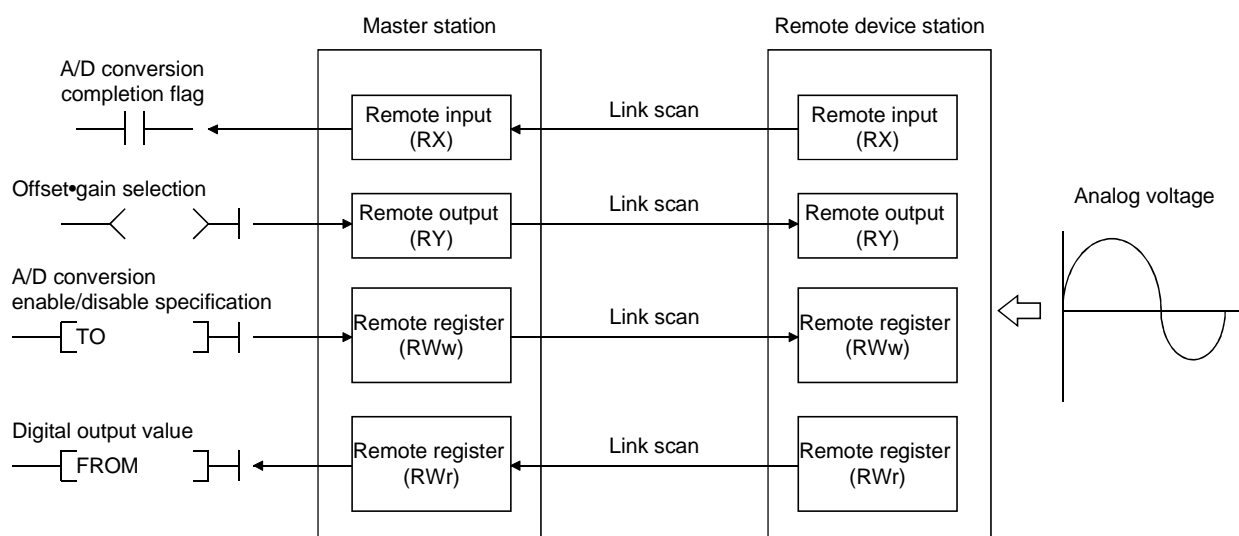
(1) Remote I/O station communication

The communication is performed with only on/off data (remote input RX and remote output RY).



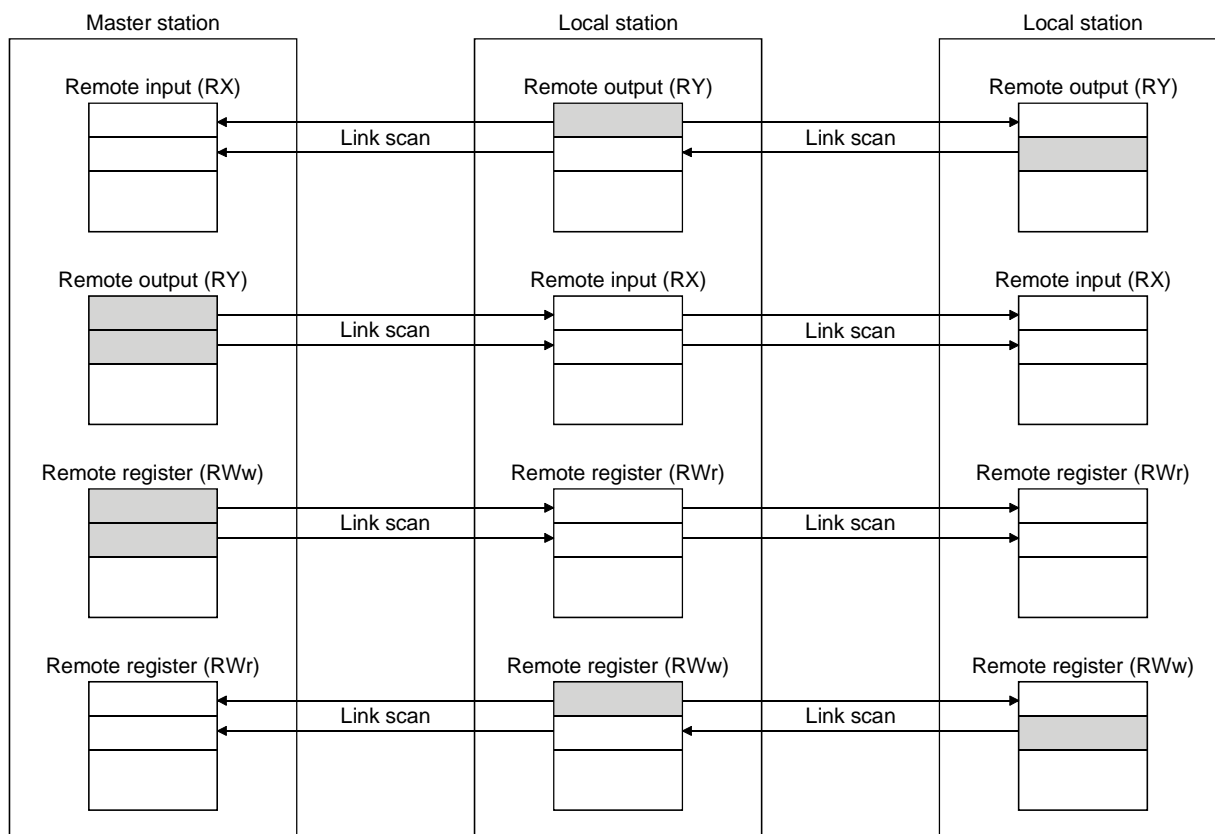
(2) Remote device station communication

The communication is performed with on/off data (remote input RX and remote output RY) and numeric data (remote register).



(3) Local station communication

The data communication between PC CPUs can be performed in N:N relationship with bit data (remote input RX and remote output RY) and word data (remote register)



(4) Establishing high-speed transmission

When the transmission speed of 10Mbps is set, the link scan time (communication time with the master station and remote station/local station) is still at high speed, even when the maximum 64 stations are connected.

- Remote I/O (RX, RY) 2048 points 4 ms
- Remote I/O (RX, RY) 2048 points
+ remote register (RWw, RWr) 512 points 7 ms

(5) System configurations are possible, according to requirements.

(a) Transmission distance

The total extended distance depends on the transmission speed, but connections can be made between 100 m (at 10 Mbps) and 1.2 km (at 156 kbps).

(b) Number of connected stations

A maximum of 64 stations, including remote I/O stations, remote device stations, and local stations can be connected to one master station.

Up to 64 remote I/O stations, 42 remote device stations, and 26 local stations can be connected. (Refer to Section 2.1.)

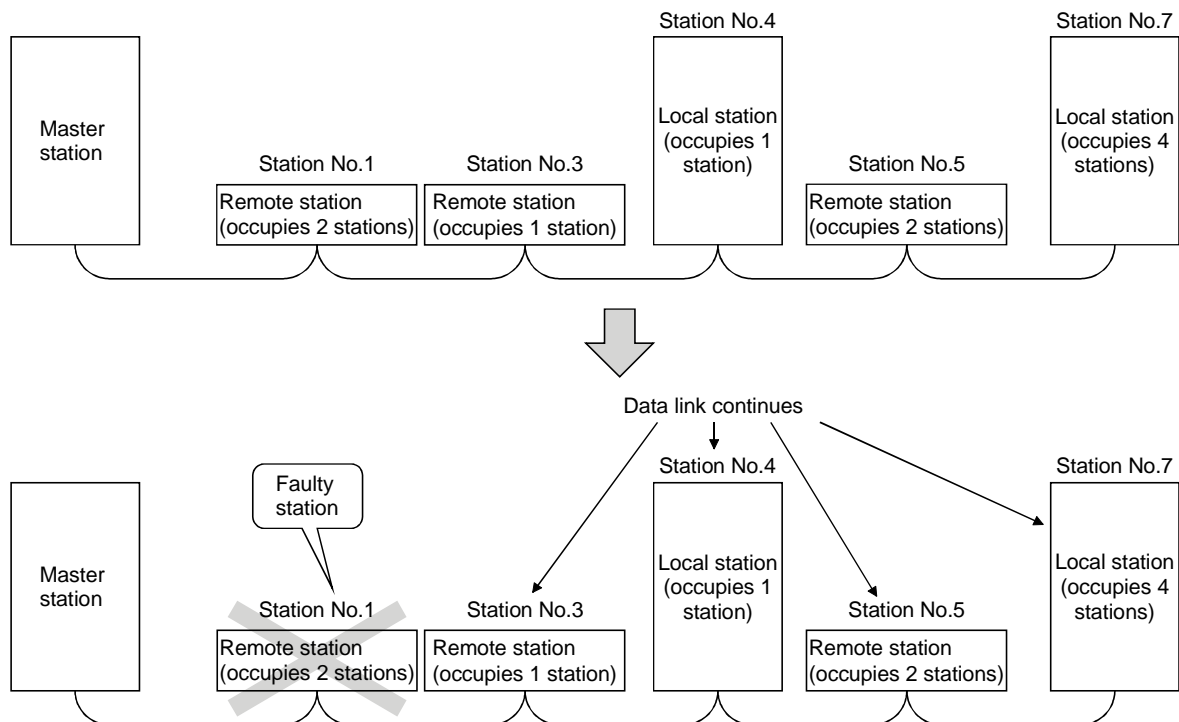
(6) Link points

2048 points of remote input (RX), 2048 points of remote output (RY), and 512 points of remote register (RW) can be used for communication in one system. For one remote station or local station, 32 points of remote input (RX), 32 points of remote output (RY), and 8 points of remote register (RW) (RWw: 4 points, RWr: 4 points) can be handled.

(7) System down prevention (Station cutoff function)

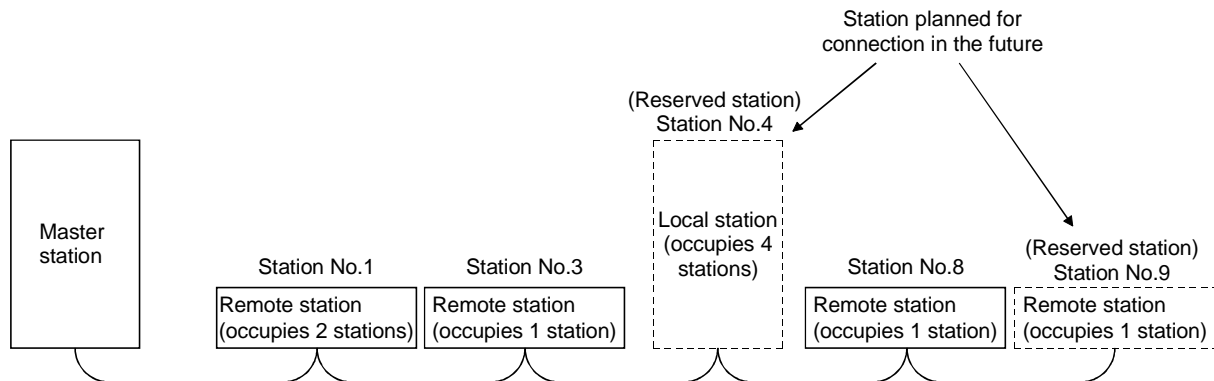
Because the system employs the bus method, even if there is a remote station or local station which goes down due to power off, etc., it won't affect the communication with other functioning remote/local stations.

Also, for the module using with the 2-piece terminal block, the module can be replaced during data link.



(8) Reserved station function

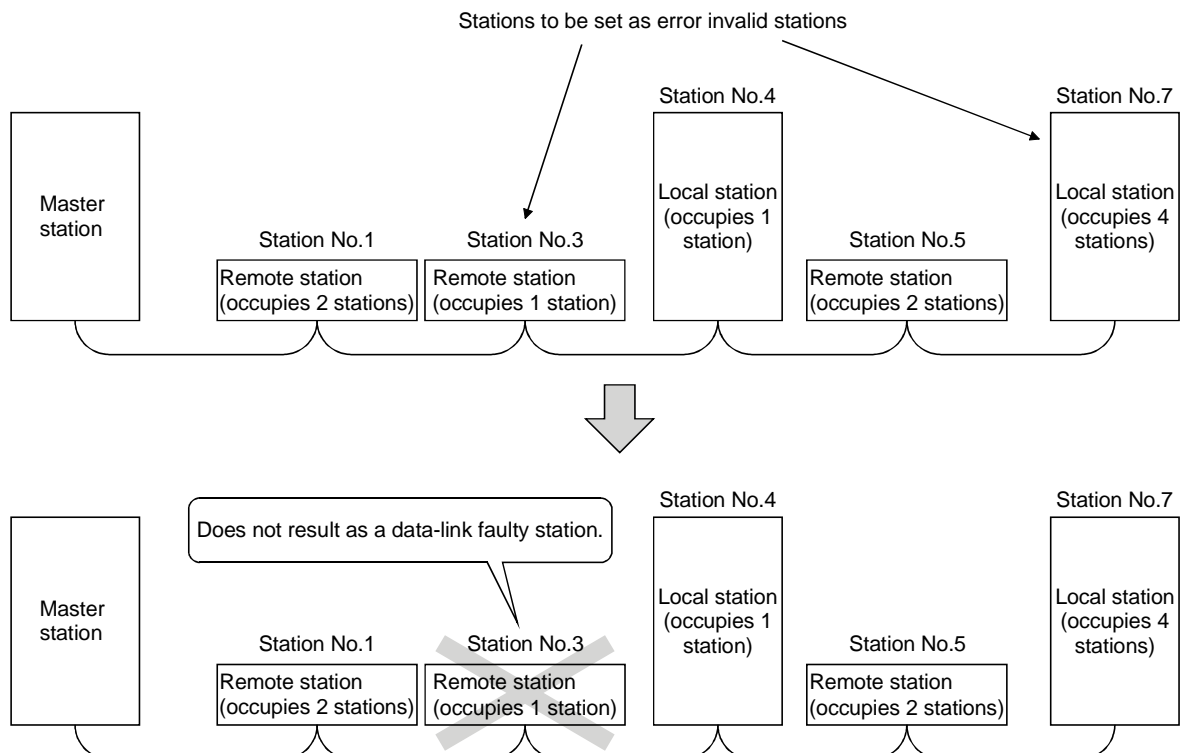
By setting the station which is not actually connected (station planned for connection in the future) as a reserved station, the station will not be handled as a faulty station.



(9) Error invalid station function

A station that cannot perform data links because the power is turned off, etc., can be handled as other than a "data-link faulty station" on the master station and the local station.

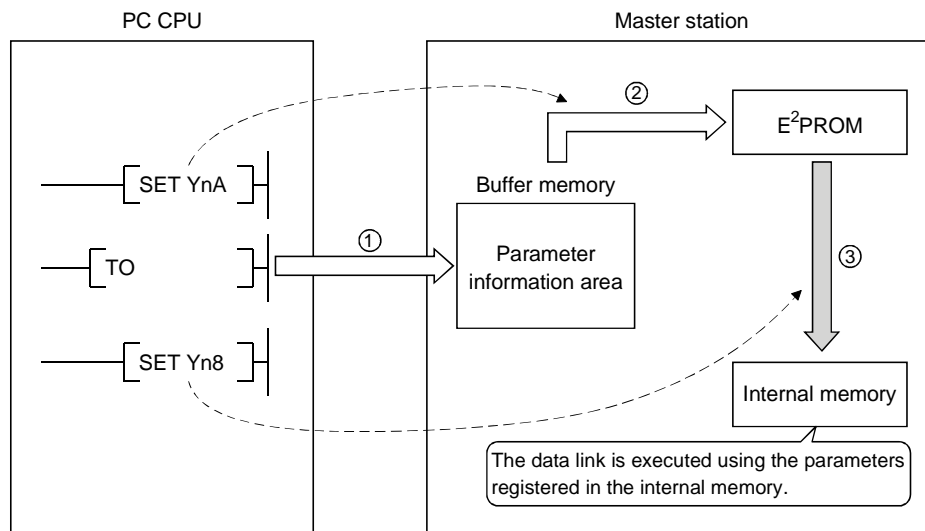
Be careful, however, for errors will not be detected.



(10) Parameter registration to the E²PROM

By registering the parameters to the E²PROM, the parameter settings do not have to be performed at each master station startup (power off → on).

Because this is the E²PROM, parameters are stored even if the module's power is turned off.

**(11) Data-link status setting for when a master station PC CPU error occurs**

The data-link status can be set (stop/continue) to either stop or continue for when a "operation stop error" occurs at the master station's PC CPU, such as SP. UNIT ERROR.

The data link between local stations can be continued.

"Operation continue errors" such as a BATTERY ERROR continue the data link regardless of the setting.

(12) Input data from data-link faulty station status setting

The data input (received) from the data-link faulty station can be cleared or kept (status right before an error is caused).

(13) Module reset function from the sequence program

When the switch setting is changed or an error occurs in the module, the module can be reset from the sequence program without resetting the PC CPU.

(This excludes when the module has a module faulty (Xn0 is on).)

(14) RAS function**(a) Automatic return function**

When a station is disconnected from the link due to power off, etc., and returns to the normal status, the station can join the data link again automatically.

(b) Link status check

Using the link special relay (SB) and link special register (SW) in the buffer memory, the current data-link status can be checked.

(c) Diagnosis function

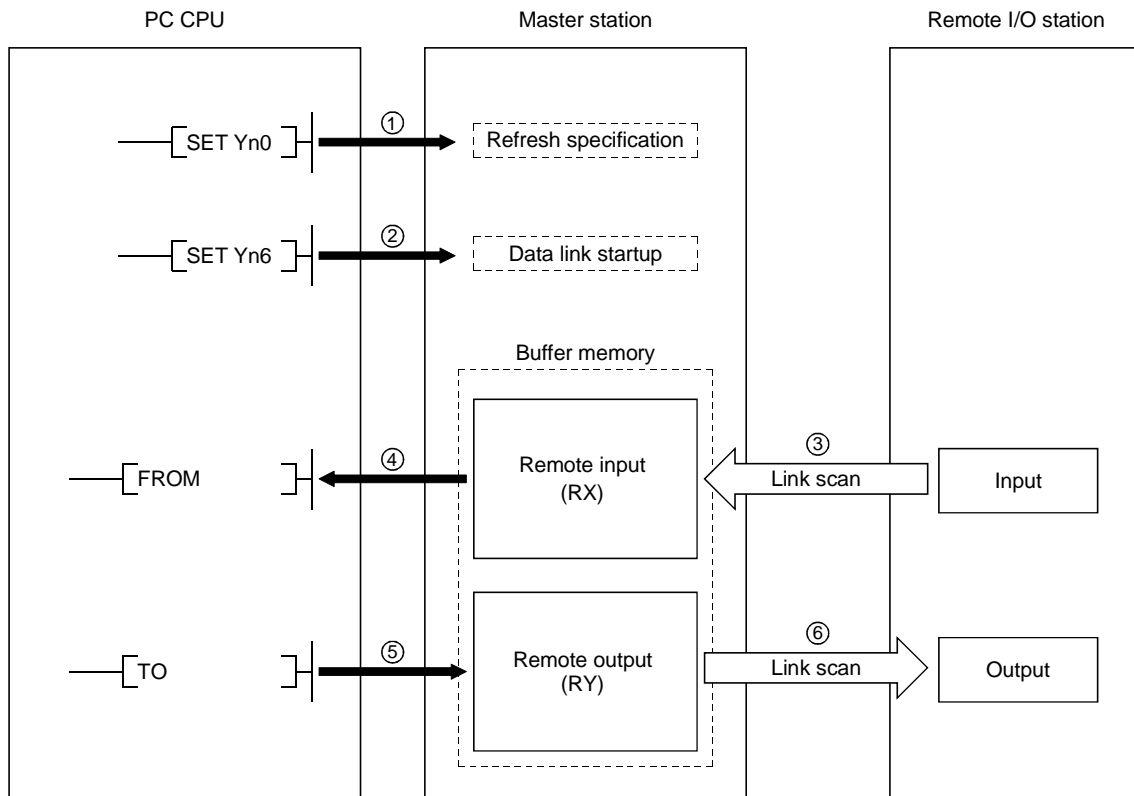
Using the switch setting, the hardware and cable conditions can be checked.

1.3 Communication Overview

1.3.1 Communication between the master station and remote I/O station

The overview of the communication between the master station and remote I/O station is described below.

Refer to Section 4.2 for details.

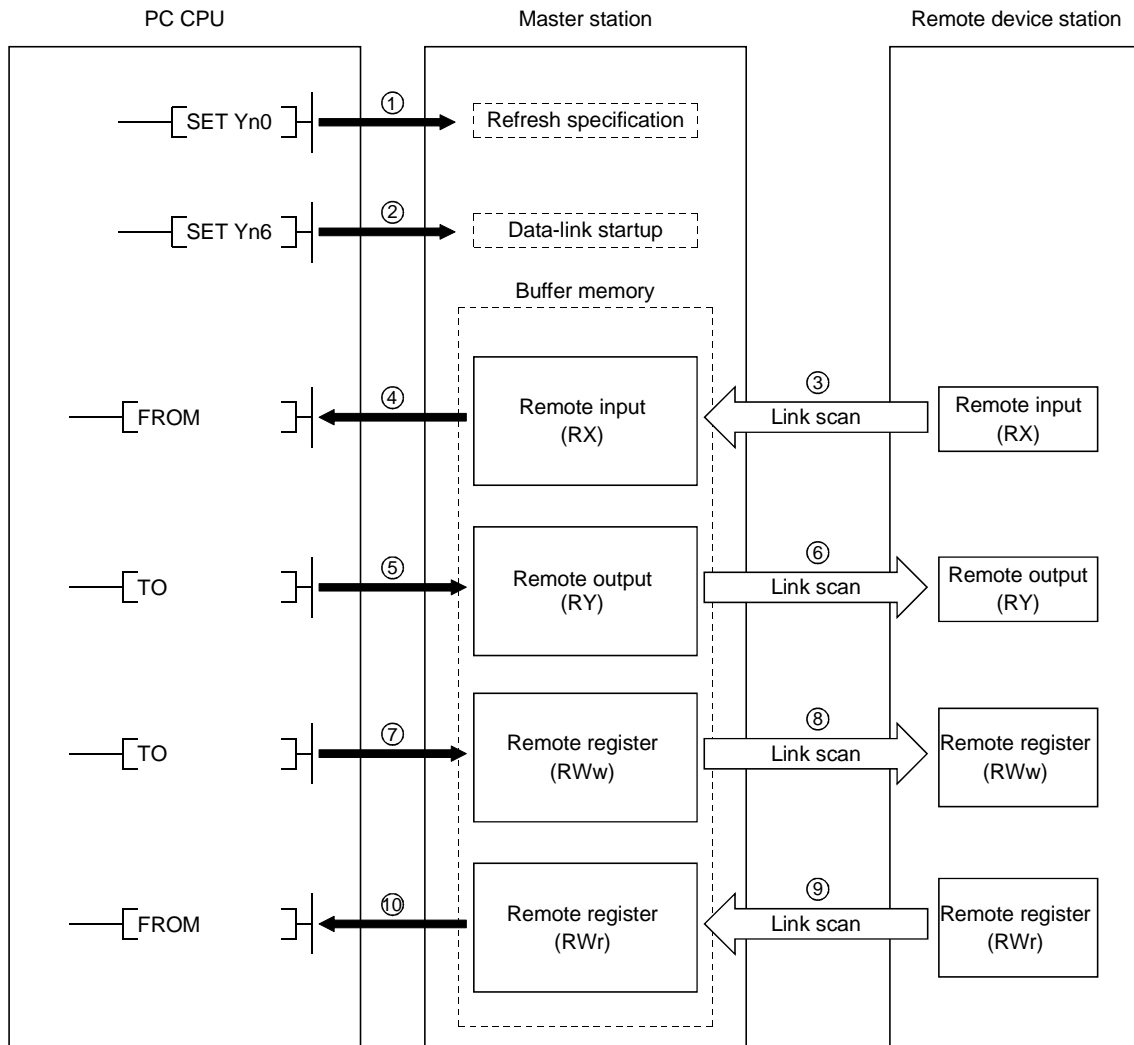


- ① Turn on the refresh specification
- ② Startup the data link.
- ③ By the link scan, the remote I/O station's input information is stored in the master station's remote input (RX).
- ④ By the FROM instruction, read from the remote input (RX).
- ⑤ By the TO instruction, write the on/off data to the remote output (RY).
- ⑥ By the link scan, the remote I/O station's output is turned on/off.

1.3.2 Communication between the master station and remote device station

The overview of the communication between the master station and remote device station is described below.

Refer to Section 4.3 for details.

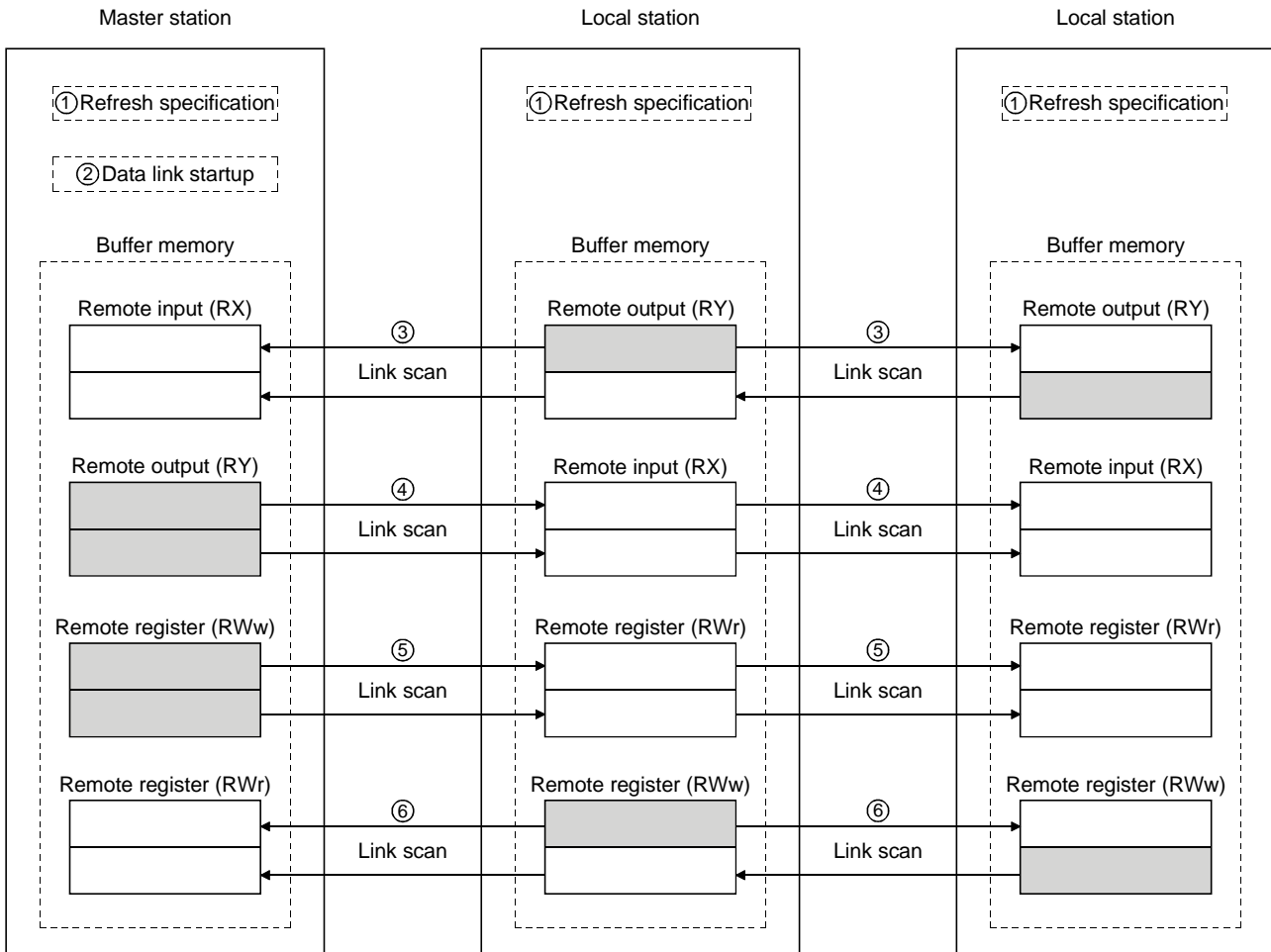


- ① Turn on the refresh specification
- ② Startup the data link.
- ③ By the link scan, the remote device station's remote input (RX) is stored in the master station's remote input (RX).
- ④ By the FROM instruction, read data from the remote input (RX).
- ⑤ By the TO instruction, write data to the remote output (RY).
- ⑥ By the link scan, the remote device station's remote output (RY) is turned on/off.
- ⑦ By the TO instruction, write data to the remote register (RWw).
- ⑧ By the link scan, the data is sent to the remote device station's remote register (RWw).
- ⑨ By the link scan, the remote device station's remote register (RWr) is sent to the master station's remote register (RWr).
- ⑩ By the TO instruction, read data from the remote register (RWr).

1.3.3 Communication between the master station and local station

The overview of the communication between the master station and local station is described below.

Refer to Section 4.4 for details.

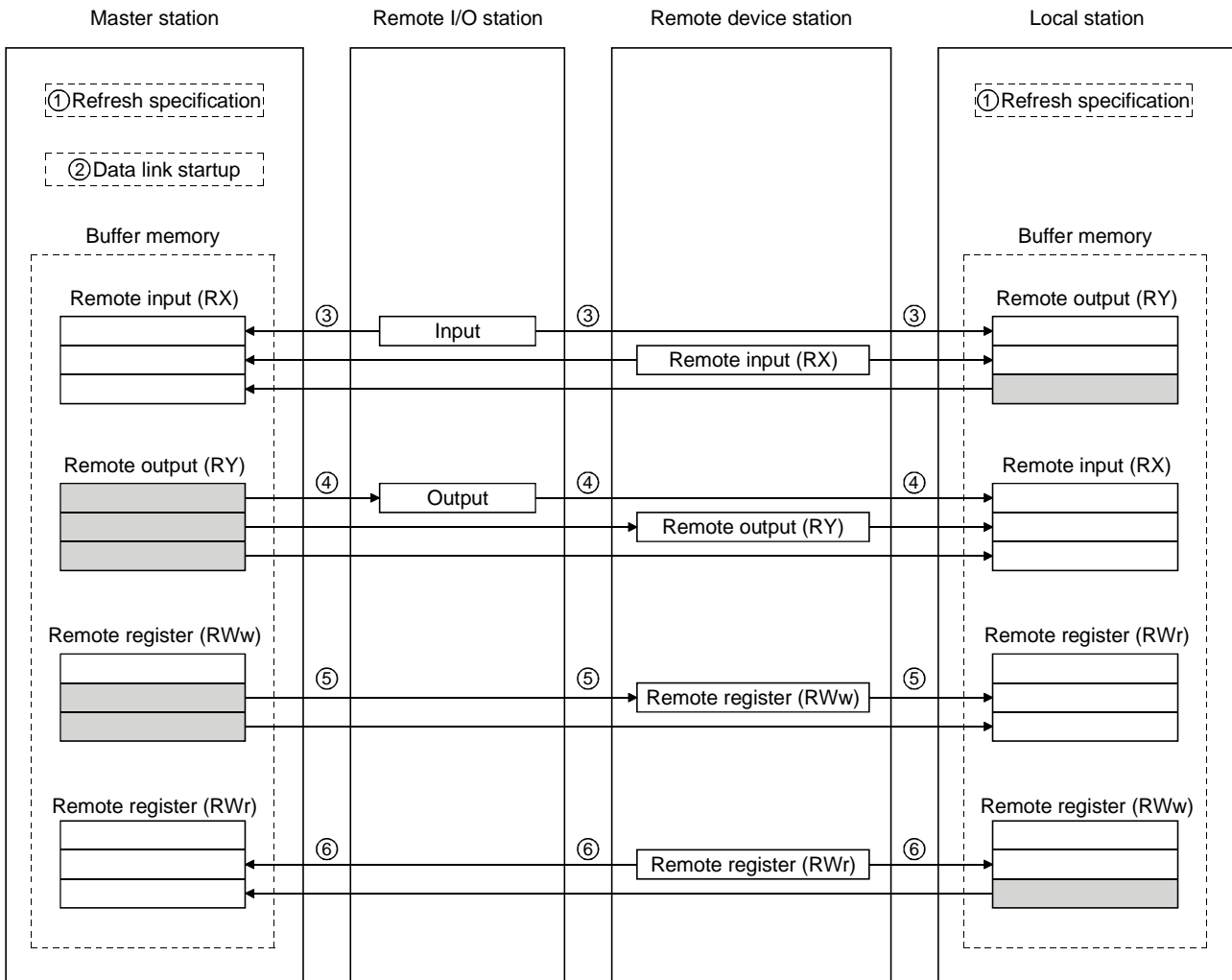


- ① Turn on the refresh specification.
- ② Startup the data link.
- ③ By the link scan, the data in the local station's remote output (RY) is sent to the master station's remote input (RX) and other local stations' remote output (RY).
- ④ By the link scan, the data in the master station's remote output (RY) is sent to all local station's remote input (RY).
- ⑤ By the link scan, the data in the master station's remote register (RWw) is sent to all local stations' remote register (RWr).
- ⑥ By the link scan, the data in the local station's remote register (RWw) is sent to the master station's remote register (RWw) and other local stations' remote register (RWw).

1.3.4 Compound system communication

The overview of compound system communication with remote I/O stations, remote device stations, and local stations is described below.

Refer to Section 4.5 for details.



- ① Turn on the refresh specification.
- ② Startup the data link.
- ③ By the link scan, data in the remote I/O station's and remote device station's remote input (RX) and local station's remote output (RY) is sent to the master station's remote input (RX) and local station's remote output (RY).
- ④ By the link scan, data in the master station's remote output (RY) is sent to the remote I/O station's and remote device station's remote output (RY) and local station's remote input (RX).
- ⑤ By the link scan, data in the master station's remote register (RWw) is sent to the remote device station's remote register (RWw) and local station's remote register (RWw).
- ⑥ By the link scan, data in the remote device station's remote register (RWw) and local station's remote register (RWw) is sent to the master station's remote register (RWw) and local station's remote register (RWw).

1.4 Number of Occupied Stations and Station Number, Number of Unit and Number of Stations

The relationship between number of occupied station and station number, and between number of units and number of stations is described below.

(1) Number of occupied stations

The number of occupied stations is fixed for each module (remote I/O station, remote device station, and local station).

However, the number of occupied stations can be set (1 to 4 stations*) for local stations.

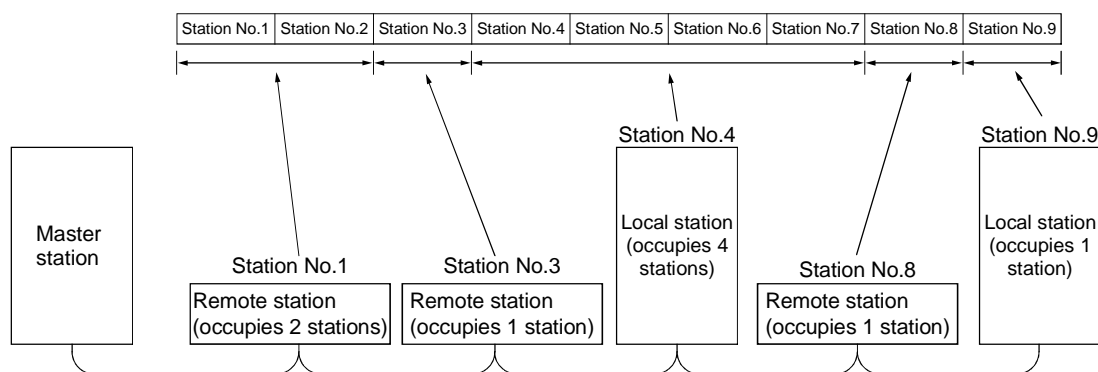
Module		Number of occupied stations
Remote I/O station (16 points and 32 points module)		1 station
Remote device station	AJ65BT-64AD	2 stations
	AJ65BT-64DAV	2 stations
	AJ65BT-64DAI	2 stations
	AJ65BT-D62	4 stations
	AJ65BT-D62D(S1)	
	A852GOT	2 or 4 stations
Local station		1 to 4 stations* (changed by switch)
Intelligent device station	AJ65BT-R2	1 station
	AJ65BT-G4	1 station
	AJ65BT-D75P2-S3	4 stations

* The AJ61BT11 of hardware version F or later and the A1SJ61BT11 of hardware version G or later are compatible with this setting. For other than the above, the setting is 1 or 4 stations only.

(2) Station number

When the number of occupied station for all connected stations is set to "1 station," the station number is set continuously from 1 (e.g. 1, 2, 3,...).

However, when a station which occupies more than 2 stations is connected, the setting must be performed considering the number of occupied stations.



(3) Number of units and number of stations

Number of units is a physical module count.

Number of stations is a number of occupied stations for each module as stated in (1).

In the system configuration example in (2), the number of units is 5 and number of stations is 9.

1.5 Abbreviations and Special Terms

Abbreviations and special terms used in this manual are shown below:

Abbreviation and special term	Description
Master station	Station which controls remote stations and local stations. One station is required for one system.
Local station	Station with CPU which can communicate with master station and other local stations.
Remote I/O station	Remote station which deals with bit information only. (AJ65BTB□-□□, AJ65BTC□-□□)
Remote device station	Remote station which deals with bit information and word information. (AJ65BT-64AD, AJ65BT-64DAV, AJ65BT-64DAI)
Remote station	General name for remote I/O station and remote device station. Controlled by a master station.
Intelligent device station	Station that can perform transient transmission (future plans). (Including local station)
Master-local module	General name for AJ61BT11 and A1SJ61BT11.
Master module	General name for AJ61BT11 and A1SJ61BT11 when they are used as master station.
Local module	General name for AJ61BT11 and A1SJ61BT11 when they are used as local station.
Remote module	General name for AJ65BTB□-□□, AJ65BTC□-□□, AJ65BT-64AD, AJ65BT-64DAV and AJ65BT-64DAI.
Intelligent module	Module that can perform transient transmission such as AJ65BT-R2
Remote I/O net mode	Mode which allows communication only with remote I/O stations without setting parameters.
Remote net mode	Mode which allows communication with all stations for CC-Link.
I/O mode	In this mode the PC CPU cannot accept transient requests from an intelligent device station. There is no limit in the number of installable modules.
Intelligent mode	In this mode the PC CPU can accept transient requests from an intelligent device station. There is a limit in the number of installable modules.
Cyclic transmission	This is the transmission method to update periodically contents of remote I/O and remote register.
Transient transmission	This is the transmission method to communicate with any timing.
AnSCPU	General name for A1SCPU, A1SCPU-S3, A1SJCPU, A1SJCPU-S3, A2SCPU, and A1SCPUC24-R2.
AnCPU	General name for A1CPU, A2CPU, A2CPUS1 and A3CPU.
AnNCPUs	General name for A1NCPUs, A2NCPUs, A2NCPUS1 and A3NCPUs.
AnACPU	General name for A2ACPU, A2ACPUS1 and A3ACPU.
A2ASCPUs	General name for A2ASCPUs and A2ASCPUS1.
AnUCPU	General name for A2UCPU, A2UCPUS1, A3UPUs and A4UCPU.
Q2ASCPUs	General name for Q2ASCPUs, Q2ASCPUS1, Q2ASHCPUs and Q2ASHCPUS1.
QnACPU	General name for Q2ACPU, Q2ACPUS1, Q3ACPU and Q4ACPU.
SB	Link special relay (for CC-Link) This relay is used to store the state of data link as bit ON/OFF information in the master station, and expressed by SB for convenience.
SW	Link special register (for CC-Link) This register is used to store the state of data link as word information in the master station, and expressed by SW for convenience.
RX	Remote input (for CC-Link) This input is used to input ON/OFF information from the remote stations to the master station, and expressed by RX for convenience.
RY	Remote output (for CC-Link) This output is used to output ON/OFF information from the master station to the remote stations, and expressed by RY for convenience.
RWw	Remote register (Write area for CC-Link) This register is used to output numerical data from the master station to the remote device stations, and expressed by RWw for convenience.
RWr	Remote register (Read area for CC-Link) This register is used to input numerical data from the remote device stations to the master station, and expressed by RWr for convenience.

2. System Configuration

The system configuration for the CC-Link is described in this chapter.

2.1 Total Configuration

A total of 64 remote I/O stations, remote device stations, local stations, standby master stations, and intelligent device stations can be connected for one master station.

However, the following conditions must be satisfied:

$$(1) \{(1 \times a) + (2 \times b) + (3 \times c) + (4 \times d)\} \leq 64$$

a : Number of modules occupying 1 station

c : Number of modules occupying 3 stations

b : Number of modules occupying 2 stations

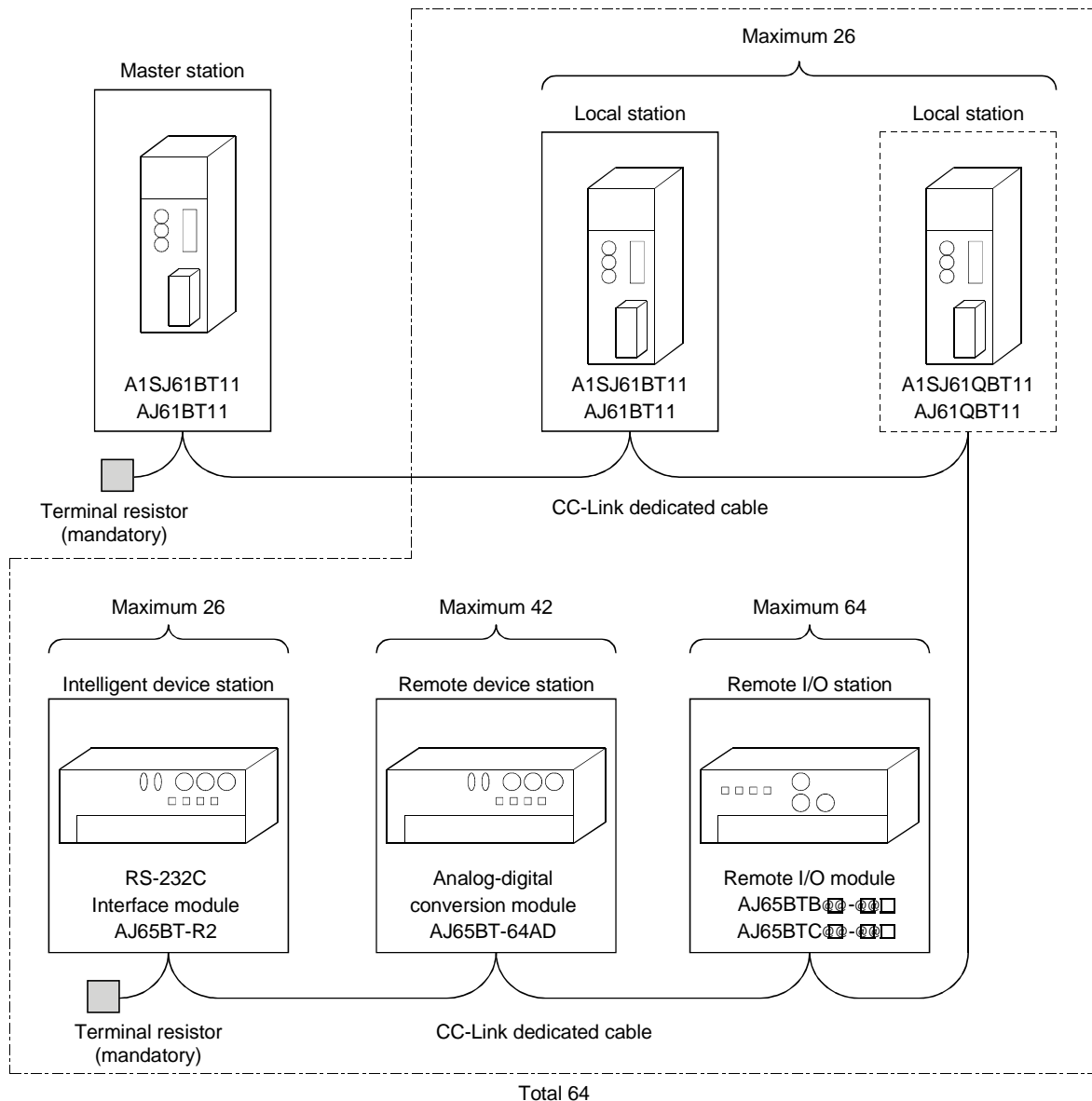
d : Number of modules occupying 4 stations

$$(2) \{(16 \times A) + (54 \times B) + (88 \times C)\} \leq 2304$$

A : Number of remote I/O stations ≤ 64

B : Number of remote device stations ≤ 42

C : Number of local stations, standby master stations, intelligent device stations ≤ 26



2.2 Applicable System

The applicable CPU modules and the precautions for system configuration are described below.

2.2.1 Applicable CPU and number of cards that can be installed

The applicable PC CPU, data link system/network system, and number of cards that can be installed are shown in Table 2.1.

However, intelligent mode can not be used for future plan.

Table 2.1 Number of cards that can be installed

Installation area		A1SJ61BT11		AJ61BT11		Remarks	
		I/O mode	Intelligent mode	I/O mode	Intelligent mode		
PC CPU	A0J2CPU	Unusable	Unusable	No restrictions	2	In the intelligent mode, the following special function modules AD51(S3) AD51H(S3) AD57G(S3) AJ71C21(S1): In the BASIC program mode AJ71C23(S3) AJ71C24(S3/S6/S8) AJ71UC24 AJ71P41 AJ71E71(S1) A1SJ71C24-R2 A1SJ71C24-PRF A1SJ71C24-R4 A1SJ71UC24-R2 A1SJ71UC24-PRF A1SJ71UC24-R4 A1SD51S A1SJ71E71-B2(S3) A1SJ71E71-B5(S3) A0J2-C24	
	A0J2HCPU						
	A1SCPU(S1)	No restrictions	2				1
	A1SHCPU						
	A1SJCPU(S3)						
	A1SJHCPU						
	A1SCPUC24-R2						
	A2SCPU(S1)						
	A2SHCPU(S1)						
	A2ASCPU(S1/S30/S60)						
	Q2ASCPU(S1)	Unusable	Unusable	Unusable	Unusable		
	Q2ASHCPU(S1)						
	A1CPU			No restrictions	2		
	A2CPU(S1)						
	A3CPU						
	A1NCPU						
	A2NCPU(S1)						
	A3NCPU						
	A3MCPUCPU						
	A3HCPU						
	A2ACPU(S1)						
	A3ACPU						
	A2UCPU(S1)			6			
	A3UCPU						
	A4UCPU						
	Q2ACPU(S1)						
	Q3ACPU						
	Q4ACPU						
	Q4ARCPU						
Data link and network	MELSECNET remote I/O station			Unusable	Unusable		Unusable
	MELSECNET/B remote I/O station		Unusable	Unusable	Unusable		Unusable
	MELSECNET/10 remote I/O station	AJ72LP25 AJ72BR15	Unusable	Unusable	No restrictions		2
		AJ72QLP25 AJ72QBR15	Unusable	Unusable	No restrictions		2
		A1SJ72QLP25 A1SJ72QBR15	No restrictions	2	No restrictions		2

POINT

The module can be installed to any of the slots. However, the module cannot be installed to the final slot of the 7th level of A3CPU extension.

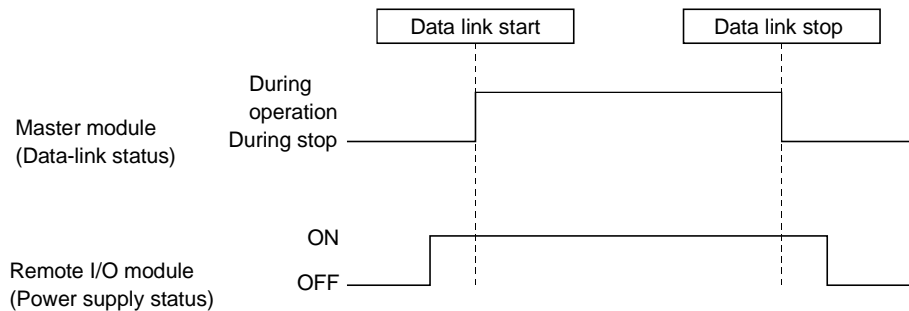
2.2.2 Precautions when configuring a system

Design the system with the following considerations to prevent mis-input from the remote I/O module:

(1) During power on and power off

Start the data link after turning on the power for the remote I/O module.

Turn off power for the remote I/O module after stopping the data link.



(2) During momentary power failure of the remote I/O module

When momentary power failure occurs with the power (24VDC) supplied to the remote I/O module, mis-input may occur.

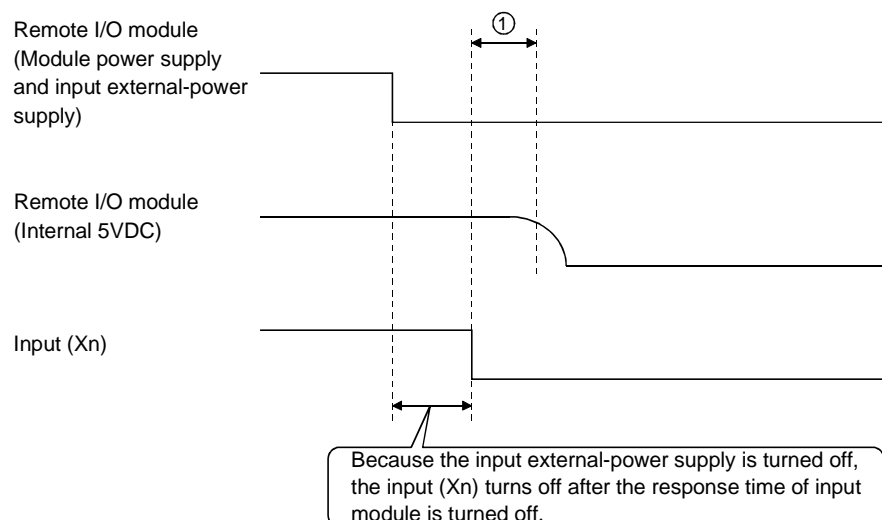
(a) Cause for mis-input due to a momentary power failure

The remote I/O module hardware uses the power after internally converting the module power (24VDC) in to 5VDC.

When momentary power failure occurs with the remote I/O module, the following condition occurs:

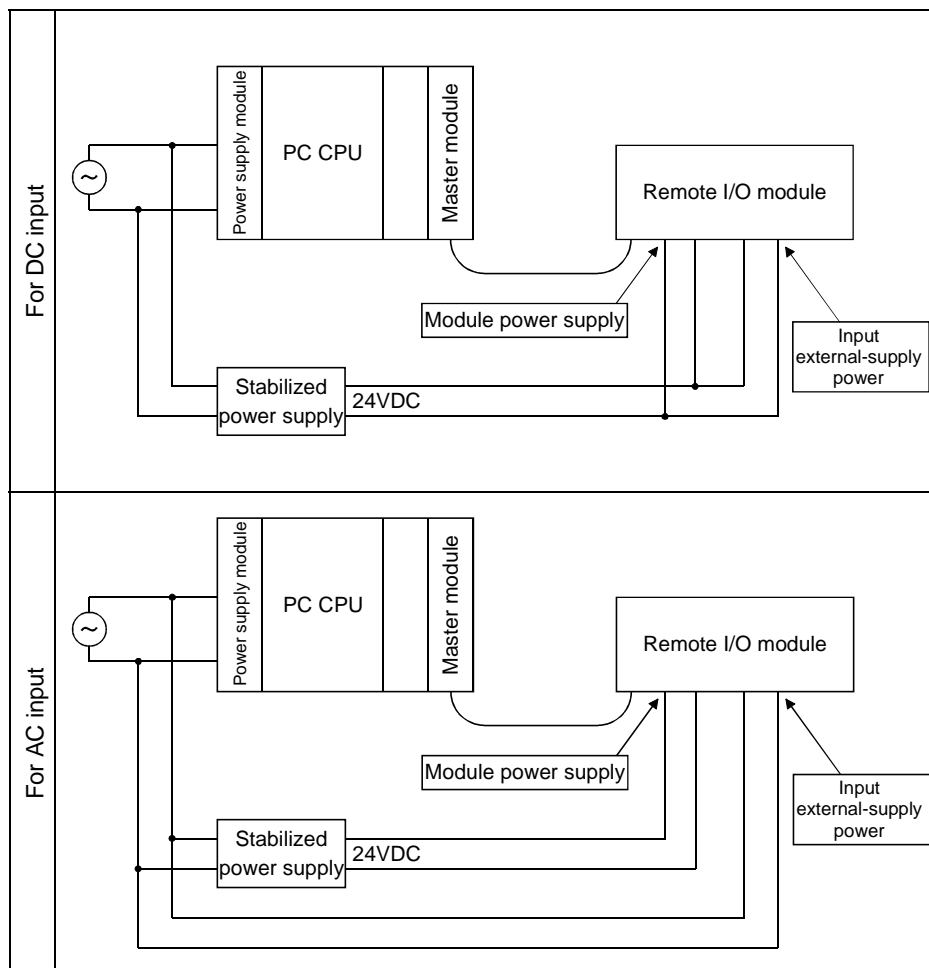
(Time for the 5VDC in the internal remote I/O module to turn off) > (input module on → off response time)

Therefore, mis-input is caused when a refresh is performed within the time indicated by ① in the diagram below.

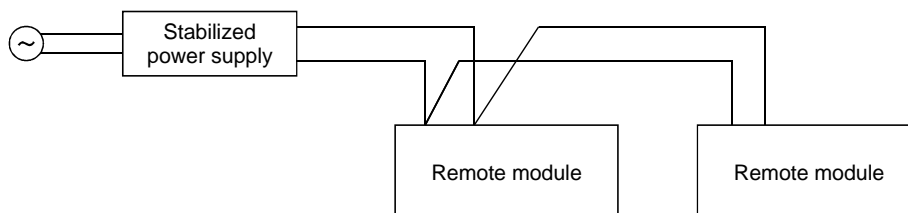


(b) Countermeasure for mis-input

Wire the power supply cable for the power supply module, stabilized power, and input/external-supply power of the AC input from the same power source.

**REMARK**

When supplying power from one power source to multiple remote I/O modules, select the cable and perform the wiring with considerations to the voltage decline from the cables. Connections can be established if the remote I/O module's receiving port voltage is within the specification range of the used remote I/O module.



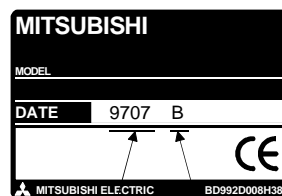
POINT

When using the functions described in Chapter 14 or later, use a system with the following symbol (9707B or later) inscribed in the DATE column of the rated plate.



Manufactured
date

Function
version



Manufactured
date

Function
version

2.2.3 List of system equipment restricted by master/local module versions

Table 2.2 lists the CC-Link system equipment restricted by the function, hardware and software versions of the master/local modules.

Table 2.2 System equipment list

Product name	Model	Description	Number of occupied stations	Station type
Master-local module	A1SJ61BT11	Master-local module for AnS/A2AS series	When local station → 1 to 4 stations * 1	Master or local station
	AJ61BT11	Master-local module for A series		
	A1SJ61QBT11	Master-local module for Q2AS series		
	AJ61QBT11	Master-local module for QnA series		
	QJ61BT11	Master/local module for Q series		
High-speed counter module	AJ65BT-D62 * 2	24 bit binary, 5/12/24VDC input type, 200kPPS, 2 channels	4 stations	Remote device station
	AJ65BT-D62D(S1) * 2	24 bit binary, differential input type, 400kPPS, 2 channels		
Thermocouple temperature input module	AJ65BT-68TD * 2	For connecting thermocouple Temperature input 8 channels		
Platinum temperature measuring resistor Pt100 temperature input module	AJ65BT-64RD3 * 2	For connecting Pt 100 (3 wire type) Temperature input 4 channels		
	AJ65BT-64RD4 * 2	For connecting Pt 100 (4 wire type) Temperature input 4 channels		
ID interface module	AJ65BT-D32ID2 * 2	Number of readers/writers that can be connected is 2		
RS-232C interface module	AJ65BT-R2 * 2	Computer link function RS-232C, 1 channel	1 station	Intelligent device station
Positioning module	AJ65BT-D75P2-S3 * 2	For positioning control, Pulse chain output 2 axes (independent, simultaneous 2 axial, 2 axial linear interpolation and 2 axial circular interpolation)	4 stations	
Peripheral device connection module	AJ65BT-G4-S3 * 3	For peripheral device connection RS-422, 1 channel	1 station	

* 1 Supported by the hardware version F and later of the AJ61BT11 and AJ61QBT11, the hardware version G and later of the A1SJ61BT11 and A1SJ61QBT11, and the function version B and later of the QJ61BT11.

For other than the above, the setting is one station or four stations only.

* 2: Can be used with function version B or later.

* 3: Can be used with software version J (manufactured in Jan., 1998) or later.

See the CC-Link Partner Association homepage <http://www.cc-link.org/> for a list of products by partner manufacturers.

2.2.4 About Ver. 1.10

The module of which the station to station cable length is uniformly 20cm or more by improving the conventional limit of the station to station cable length is defined as Ver.1.10.

The conventional modules are defined as Ver.1.00.

Refer to Section 3.2.2 for the maximum overall cable distance of Ver. 1.10.

The conditions for setting the station to station cable length uniformly to 20cm or more are indicated below.

- 1) All modules configuring the CC-Link system must use Version 1.10.
- 2) All data link cables must be Version 1.10 compatible CC-Link dedicated cable.

POINT

In a system where the modules and cables of Ver. 1.00 and Ver. 1.10 are used together, the maximum overall cable distance and station to station cable length are as specified for Ver. 1.00. Refer to Section 3.2.1 for the maximum overall cable distance and station to station cable length of Ver. 1.00.

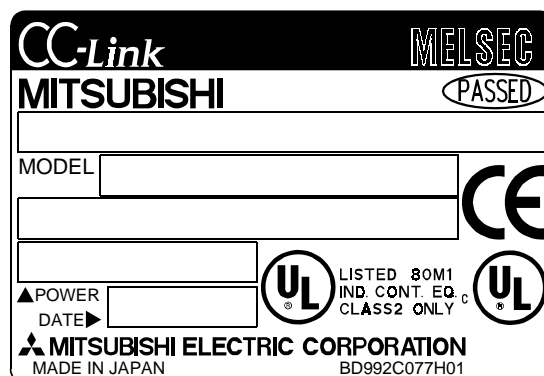
(1) Checking Version 1.10

The "CC-Link" logo is stamped on the "plate" for the Version 1.10 modules.

(a) Rating plate of AJ61BT11



(b) Rating plate of A1SJ61BT11



MEMO

[illegible]

3. Specification

3.1 General Specification

The general specification is shown in Table 3.1.

Table 3.1 General specification

Item	Specifications					
Ambient operating temperature	0 to 55°C					
Ambient storage temperature	-20 to 75°C					
Ambient operating humidity	10 to 90% RH, Non-condensing					
Ambient storage humidity	10 to 90% RH, Non-condensing					
Vibration resistance	Conforming to JIS B 3502, IEC 61131-2	Under intermittent vibration	Frequency	Acceleration	Amplitude	No. of sweeps 10 times each in X, Y, Z directions (for 80 min.)
			10 to 57Hz	–	0.075mm (0.003inch)	
		Under continuous vibration	57 to 150Hz	9.8m/s ²	–	
			10 to 57Hz	–	0.035mm (0.001inch)	
			57 to 150Hz	4.9m/s ²	–	
Shock resistance	Conforming to JIS B 3502, IEC 61131-2 (147m/s ² , 3 times in each of 3 directions X Y Z)					
Operating ambience	No corrosive gases					
Operating elevation	2000m (6562 feet) max.					
Installation location	Control panel					
Over voltage category*1	II max.					
Pollution level*2	2 max.					

*1: This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300V is 2500V.

*2: This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used. Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensation must be expected occasionally.

3.2 Performance Specifications

The performance specifications of the CC-Link is shown in Table 3.2.

Table 3.2 Performance specifications

Item	AJ61BT11	A1SJ61BT11
Transmission speed	Can select from 156 kbps/ 625 kbps/ 2.5 Mbps/ 5 Mbps/ 10 Mbps	
Maximum overall cable distance (Maximum transmission distance)	Different from the transmission speed: (Refer to Section 3.2.1, 3.2.2)	
Maximum number of connected stations (when master station)	64 units { However, the following conditions must be satisfied: $\{(1 \times a) + (2 \times b) + (3 \times c) + (4 \times d)\} \leq 64$ a: number of modules occupying 1 station b: number of modules occupying 2 stations c: number of modules occupying 3 stations d: number of modules occupying 4 stations $\{(16 \times A) + (54 \times B) + (88 \times C)\} \leq 2304$ A: Number of remote I/O stations ≤ 64 B: Number of remote device stations ≤ 42 C: Number of local stations, standby master stations, intelligent device stations ≤ 26	
Number of occupied stations (when local station)	1 to 4 stations * 1 (switched using DIP switch)	
Maximum link points for one system	Remote I/O (RX, RY) : 2048 points Remote register (RWw) : 256 points (master station → remote/local station) Remote register (RWr) : 256 points (remote/local station → master station)	
Link points for one remote/local station	Remote I/O (RX, RY) : 32 points (local station: 30 points) Remote register (RWw) : 4 points (master station → remote/local station) Remote register (RWr) : 4 points (remote/local station → master station)	
Communication method	Polling	
Synchronous method	Frame synchronous method	
Encoding method	NRZI method	
Transmission path	Bus (RS-485)	
Transmission format	HDLC standard	
Error control system	CRC ($X^{16} + X^{12} + X^5 + 1$)	
Connection cable	CC-Link dedicated cable/CC-Link dedicated high performance cable/Version 1.10 compatible CC-Link dedicated cable *2	
RAS function	<ul style="list-style-type: none"> • Automatic return function • Slave station cutoff function • Error detection by the link special relay/register 	
Number of parameter registration to E ² PROM	10,000 times	
I/O occupied points	32 points (I/O allocation: 32 special points)	
Internal current consumption (5VDC)	0.45 A	0.4 A
Weight	0.4 kg	0.25 kg

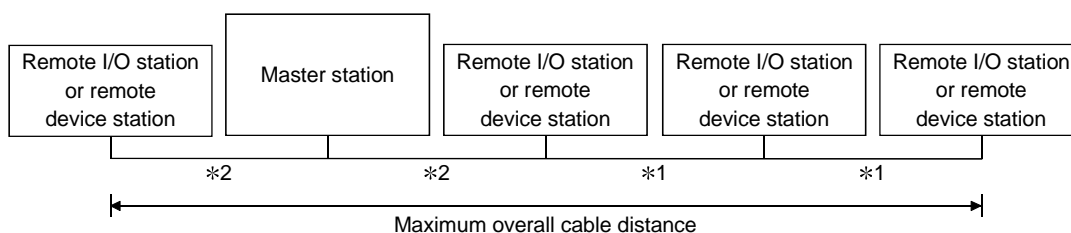
* 1 : The AJ61BT11 of hardware version F or later and the A1SJ61BT11 of hardware version G or later are compatible with this setting. For other than the above, the setting is 1 or 4 stations only.

* 2 : CC-Link dedicated cables cannot be used together with CC-Link dedicated advanced cables.

3.2.1 Maximum overall cable distance (for Ver. 1.00)

The relationship between the transmission speed and the maximum overall cable distance is described below:

- (1) For a system consisting of only remote I/O stations and remote device stations



*1 Cable length between remote I/O stations or remote device stations.

*2 Cable length between the master station and the adjacent stations.

CC-Link dedicated cable (uses terminal resistor 110 Ω)

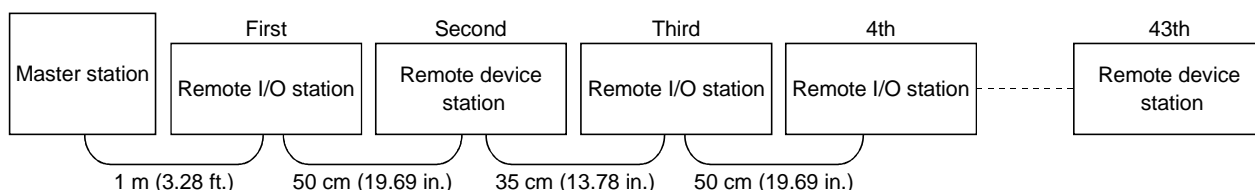
Transmission rate	Station-to-station cable length		Maximum overall cable distance
	*1	*2	
156 kbps	30 cm (11.81 in.) or more	1 m (3.28 ft.) or more	1200 m (3937.2 ft.)
625 kbps			600 m (1968.6 ft.)
2.5 Mbps			200 m (656.2 ft.)
5 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) *		110 m (360.9 ft.)
	60 cm (23.62 in.) or more		150 m (492.15 ft.)
10 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) *		50 m (164.1 ft.)
	60 cm (23.62 in.) to 99 cm (38.98 in.) *		80 m (262.5 ft.)
	1 m (3.28 ft.) or more		100 m (328.1 ft.)

CC-Link dedicated high performance cable (uses terminal resistor 130 Ω)

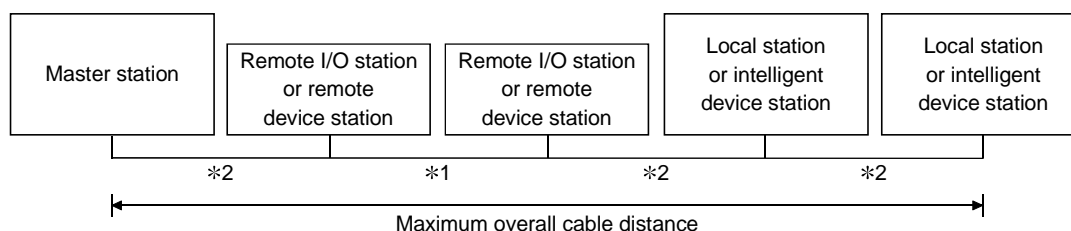
Transmission rate		Station-to-station cable length		Maximum overall cable distance
		* 1	* 2	
156 kbps		30 cm (11.81 in.) or more	1 m (3.28 ft.) or more	1200 m (3937.2 ft.)
625 kbps				900 m (2952.9 ft.)
2.5 Mbps				400 m (1312.4 ft.)
5 Mbps				160 m (524.96 ft.)
10 Mbps	Number of connected stations: 1 to 32			100 m (328.1 ft.)
	Number of connected stations: 33 to 48	30 cm (11.81 in.) to 39 cm (15.35 in.) *		80 m (262.5 ft.)
		40 cm (15.75 in.) or more		100 m (328.1 ft.)
	Number of connected stations: 49 to 64	30 cm (11.81 in.) to 39 cm (15.35 in.) *		20 m (65.52 ft.)
		40 cm (15.75 in.) to 69 cm (27.17 in.) *		30 m (98.43 ft.)
		70 cm (27.56 in.) or more		100 m (328.1 ft.)

* The cable length between remote I/O stations or remote device stations is within this range and if even one location is wired, the maximum overall cable distance will be as indicated above.

(Example) When the transmission rate is 10 Mbps, and 43 remote I/O stations and remote device stations are connected using the CC-Link dedicated high performance cable, because the cable connecting the second and third stations is "35 cm (13.78 in.)", the maximum overall cable distance will be "80 cm (31.5 in.)".



(2) For a system consisting of remote I/O stations, remote device stations, local stations and intelligent device stations



*1 Cable length between remote I/O stations or remote device stations

*2 Cable length between the master station or the local or intelligent device station and the adjacent stations

CC-Link dedicated cable (uses terminal resistor 110 Ω)

Transmission rate	Station-to-station cable length		Maximum overall cable distance
	* 1	* 2	
156 kbps	30 cm (11.81 in.) or more	2 m (6.56 ft.) or more	1200 m (3937.2 ft.)
625 kbps			600 m (1968.6 ft.)
2.5 Mbps			200 m (656.2 ft.)
5 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) *		110 m (360.9 ft.)
10 Mbps	60 cm (23.62 in.) or more		150 m (492.15 ft.)
	30 cm (11.81 in.) to 59 cm (23.23 in.) *		50 m (164.1 ft.)
	60 cm (23.62 in.) to 99 cm (38.98 in.) *		80 m (262.5 ft.)
	1 m (3.28 ft.) or more		100 m (328.1 ft.)

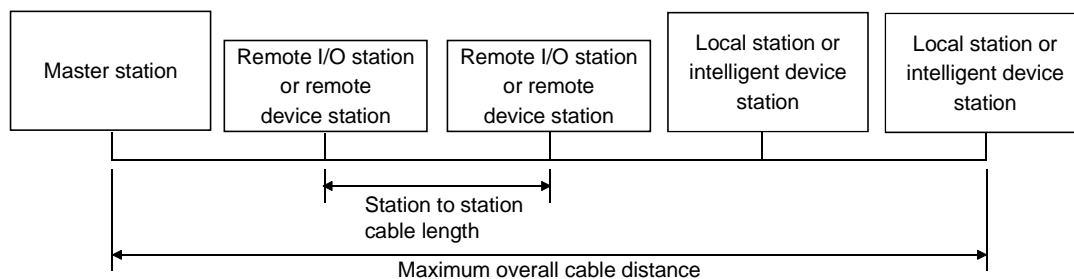
CC-Link dedicated high performance cable (uses terminal resistor 130 Ω)

Transmission rate	Station-to-station cable length		Maximum overall cable distance
	* 1	* 2	
156 kbps	30 cm (11.81 in.) or more	2 m (6.56 ft.) or more	1200 m (3937.2 ft.)
625 kbps			600 m (1968.6 ft.)
2.5 Mbps			200 m (656.2 ft.)
5 Mbps	30 cm (11.81 in.) to 59 cm (23.23 in.) *		110 m (360.9 ft.)
	60 cm (23.62 in.) or more		150 m (492.15 ft.)
10 Mbps	70 cm (27.56 in.) to 99 cm (38.98 in.) *		50 m (164.1 ft.)
	1 m (3.28 ft.) or more		80 m (262.5 ft.)

* The cable length between remote I/O stations or remote device stations is within this range and if even one location is wired, the maximum overall cable distance will be as indicated above.

3.2.2 Maximum overall cable distance (for Ver. 1.10)

The relation of the transmission speed and maximum overall cable distance when configuring the entire system with Version 1.10 modules and cable is shown below.



Version 1.10 compatible CC-Link dedicated cable (terminal resistor of 110Ω used)

Transmission speed	Station to station cable length	Maximum overall cable distance
156kbps	20cm or longer	1200m
625kbps		900m
2.5Mbps		400m
5Mbps		160m
10Mbps		100m

3.3 CC-Link Dedicated Cable

Use the CC-Link dedicated cable for the CC-Link system. If a cable other than the CC-Link dedicated cable is used, the performance of the CC-Link system cannot be guaranteed.

For the specifications and contacts of the CC-Link dedicated cable, visit the CC-Link Partner Association home page at <http://www.cc-link.org/>.

3.4 I/O Signals to the PC CPU

The I/O signals for the master/local module's PC CPU is described.

3.4.1 I/O signal list

The list of I/O signals is described in Table 3.3.

The "n" in the table indicates the master/local module's first I/O number, and it is determined by the installation position and the module installed before the master/local module.

<Example> When the master/local module's first I/O number is "X/Y30":

Xn0 to X(n+1)F → X30 to X4F

Yn0 to Y(n+1)F → Y30 to Y4F

Table 3.3 I/O signal list

Signal direction: PC CPU ← master/local module				Signal direction: PC CPU → master/local module			
Input number	Signal name	Availability		Output number	Signal name	Availability	
		Master station	Local station			Master station	Local station
Xn0	Module error	○	○	Yn0	Refresh command	○	○
Xn1	Data link status at host station	○	○	Yn1	(Prohibited to use)	—	—
Xn2	Parameter setting status	○	×	Yn2		—	—
Xn3	Data link status at other stations	○	○	Yn3		—	—
Xn4	Module reset acceptance complete	○	○	Yn4	Module reset request	○	○
Xn5	(Prohibited to use)	—	—	Yn5	(Prohibited to use)	—	—
Xn6	Data link startup by buffer memory parameter normal completion	○	×	Yn6	Data link startup request from buffer memory parameters	○	×
Xn7	Data link startup by buffer memory parameter error completion	○	×	Yn7	(Prohibited to use)	—	—
Xn8	Data link startup by E ² PROM parameter normal completion	○	×	Yn8	Data link startup request from the E ² PROM parameters	○	×
Xn9	Data link startup by E ² PROM parameter error completion	○	×	Yn9	(Prohibited to use)	—	—
XnA	Parameter registration to E ² PROM normal completion	○	×	YnA	Parameter registration request to E ² PROM	○	×
XnB	Parameter registration to E ² PROM error completion	○	×	YnB	(Prohibited to use)	—	—
XnC	(Prohibited to use)	—	—	YnC		—	—
XnD	E ² PROM erasure normal completion	○	×	YnD	E ² PROM erasure request	○	×
XnE	E ² PROM erasure abnormal completion	○	×	YnE	(Prohibited to use)	—	—
XnF	Module ready	○	○	YnF		—	—

○: Usable ×: Prohibited to use

Table 3.3 I/O signal list

Signal direction: PC CPU ← master/local module				Signal direction: PC CPU → master/local module			
Input number	Signal name	Availability		Output number	Signal name	Availability	
		Master station	Local station			Master station	Local station
X(n+1)0	(Prohibited to use)	—	—	Y(n+1)0	(Prohibited to use)	—	—
X(n+1)1				Y(n+1)1			
X(n+1)2				Y(n+1)2			
X(n+1)3				Y(n+1)3			
X(n+1)4				Y(n+1)4			
X(n+1)5				Y(n+1)5			
X(n+1)6				Y(n+1)6			
X(n+1)7				Y(n+1)7			
X(n+1)8				Y(n+1)8			
X(n+1)9				Y(n+1)9			
X(n+1)A				Y(n+1)A			
X(n+1)B				Y(n+1)B			
X(n+1)C				Y(n+1)C	Bank switch specification of buffer memory	○	—
X(n+1)D				Y(n+1)D			
X(n+1)E				Y(n+1)E	(Prohibited to use)	—	—
X(n+1)F				Y(n+1)F			

○: Usable ×: Prohibited to use

Important

The output signals that are prohibited to use as shown in Table 3.3 are used by the system, so users may not use them. When a user does use (on/off) these signals, a normal operation cannot be guaranteed.

3.4.2 I/O signal details

The on/off timing, conditions, etc. of I/O signals shown in Table 3.3 are described.

(1) Module error: Xn0

Indicates if the module is normal or not.

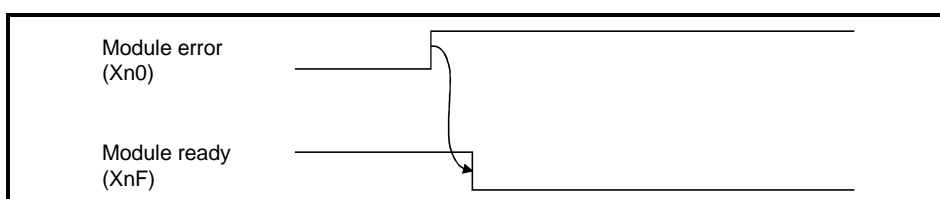
Turns ON when a watchdog timer error occurs due to a hardware fault or the like.

If the module is abnormal (Xn0 is ON), do not execute the FROM/TO instruction for the module.

When making a reset, reset the PLC CPU.

OFF : module normal

ON : module error

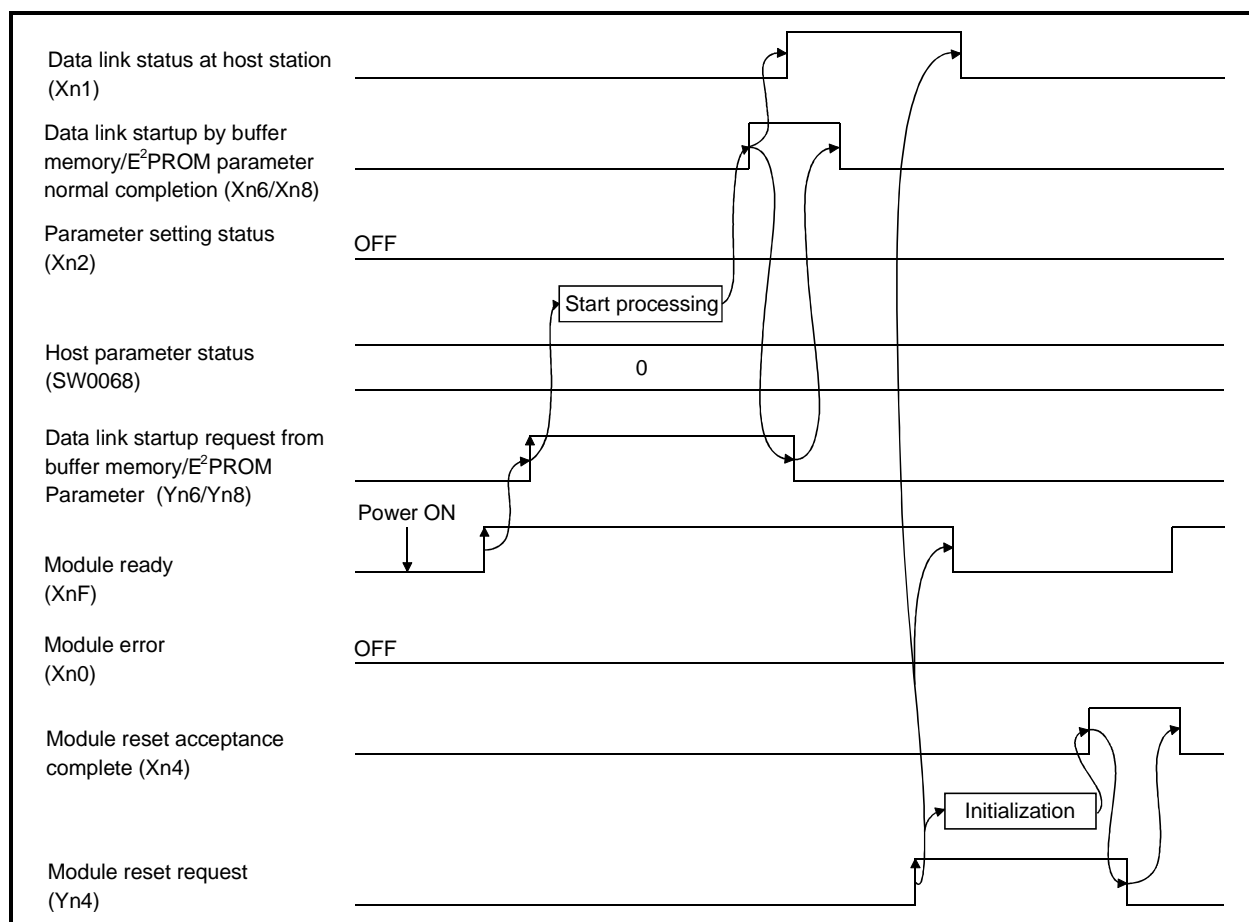


(2) Data link status at host station: Xn1

Indicates data link status at the host station.

OFF : data link stopped

ON : data link in progress



(3) Parameter setting status: Xn2

Indicates parameter setting status at host station.

SB006D has the same meaning.

OFF : normal

ON : error in setting (An error code is stored in SW0068.)

Turns off when Yn6 or Yn8 is executed in the status that error does not occur.

(4) Data link status at other stations: Xn3

Indicates data link status at other stations (remote/local stations).

SB0080 has the same meaning.

OFF : all stations normal

ON : error station exists (An error station status is stored in SW0080 to 83.)

(5) Module reset acceptance complete: Xn4

Indicates the acceptance status of reset request by the module reset request (Yn4).

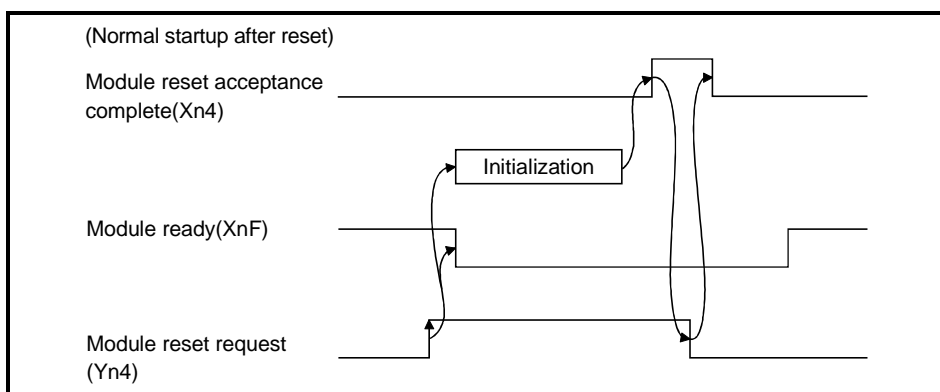
Reset cannot be performed when module error (Xn0 on).

(a) When module reset request (Yn4) is turned on, module ready (XnF) turns off and initialization is executed.

When the initialization is completed normally, module ready (XnF) turns on.

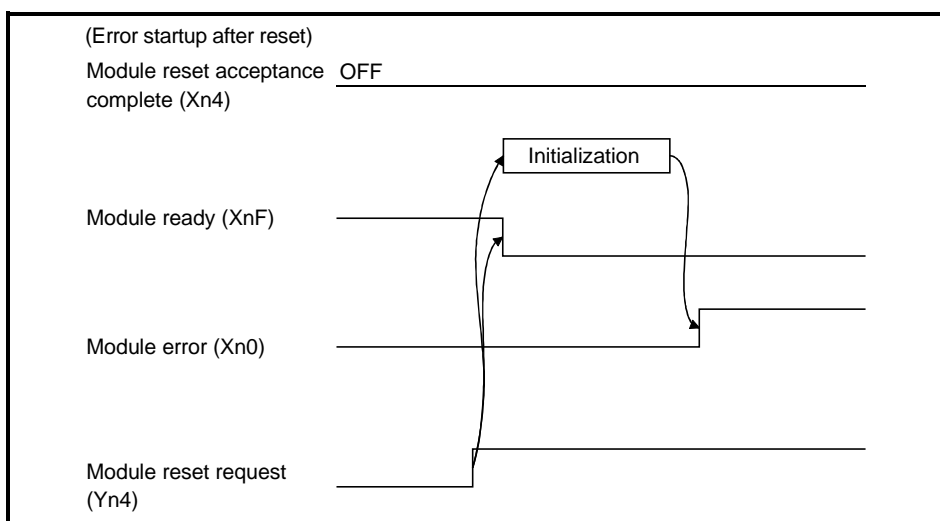
Module reset request (Yn4) is turned off by turning on the module reset acceptance complete (Xn4).

To make a data link, set the data link startup request (Yn6/Yn8) again.



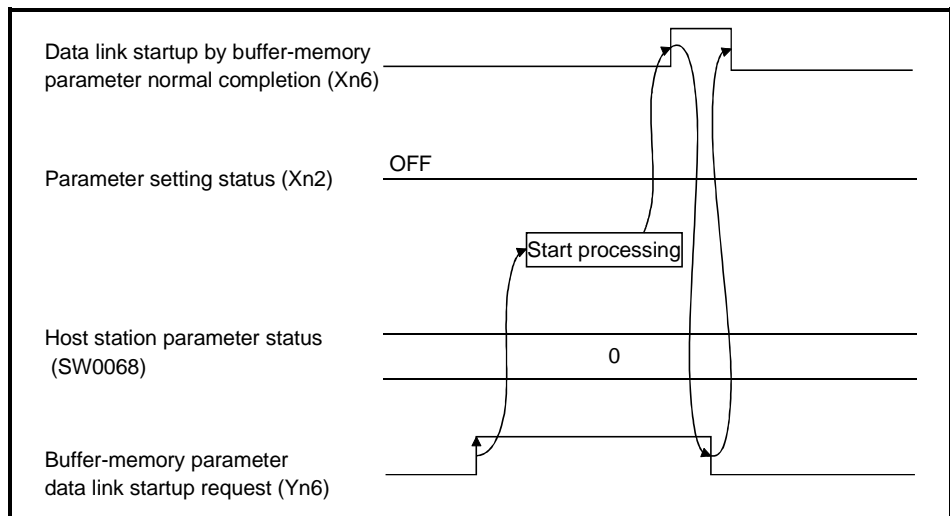
(b) When module reset request (Yn4) is turned on, module ready (XnF) turns off and initialization is executed.

When the initialization is completed abnormally, module ready (XnF) does not turn on, but module error (Xn0) turns on.



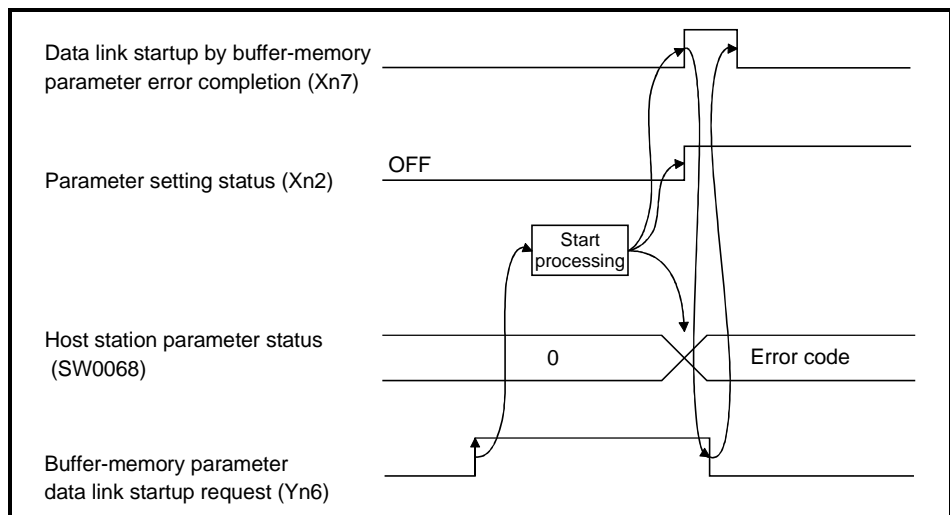
- (6) Data link startup by buffer memory parameter normal completion: Xn6
Indicates normal completion in data link startup requested by the buffer-memory parameter data link startup request (Yn6).

- (a) When (Yn6) is turned on, the parameter contents at the (address 0H to 5FH) in buffer memory are checked. If the check result is normal data link is started automatically.
- (b) When data link is normally started, the signal for "data link startup by buffer-memory parameter normal completion" (Xn6) is turned on.
- (c) (Xn6) is turned off by turning off (Yn6).



- (7) Data link startup by buffer memory parameter error completion: Xn7
Indicates abnormal completion in data link startup requested by the buffer-memory parameter data link startup request (Yn6).

- (a) When (Yn6) is turned on, the parameter contents at the (address 0H to 5FH) in buffer memory are checked. If error is detected the signal for "data link startup by buffer-memory parameter abnormal completion" (Xn7) is turned on.
- (b) Parameter setting status (Xn2) is turned on and the error code is stored in the host station parameter status in buffer memory (SW0068).
- (c) (Xn7) is turned off by turning off (Yn6).



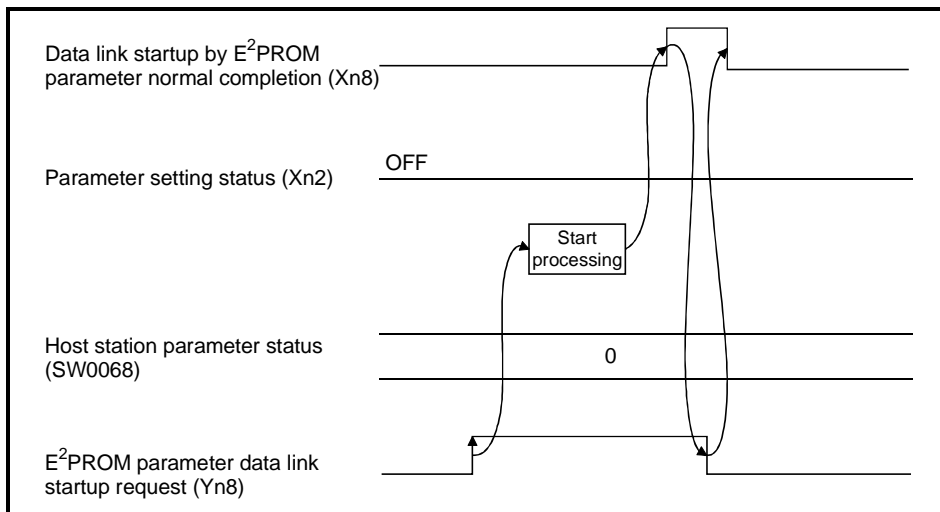
(8) Data link startup by E²PROM parameter normal completion: Xn8

Indicates normal completion in data link startup requested by the E²PROM parameter data link startup request (Yn8).

(a) When (Yn8) is turned on, the E²PROM parameter contents are checked. If the check result is normal data link is started automatically.

(b) When data link is normally started, the signal for "data link startup by E²PROM parameter normal completion" (Xn8) is turned on.

(c) (Xn8) is turned off by turning off (Yn8).

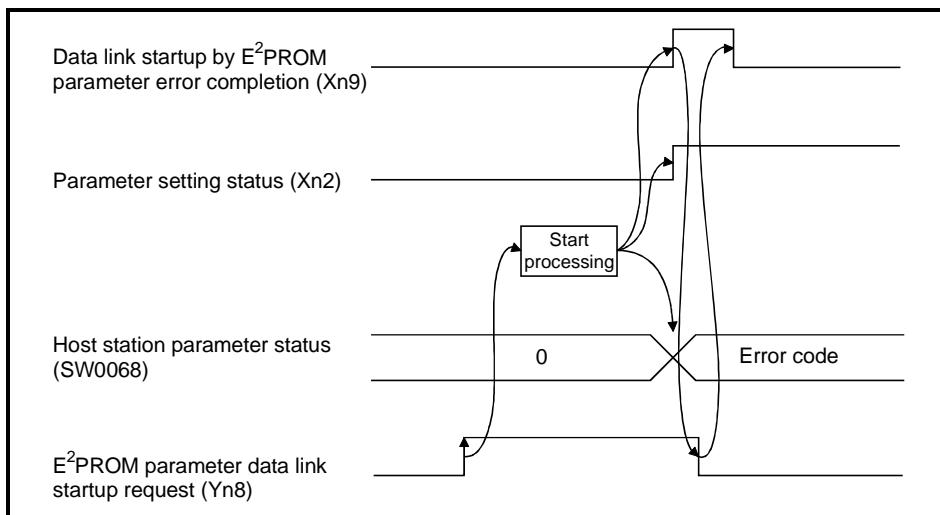
(9) Data link startup by E²PROM parameter error completion: Xn9

Indicates abnormal completion in data link startup requested by the E²PROM parameter data link startup request (Yn8).

(a) When (Yn8) is turned on, the E²PROM parameter contents are checked. If error is detected the signal for "data link startup by E²PROM parameter abnormal completion" (Xn9) is turned on.

(b) Parameter setting status (Xn2) is turned on and the error code is stored in the host station parameter status in buffer memory (SW0068).

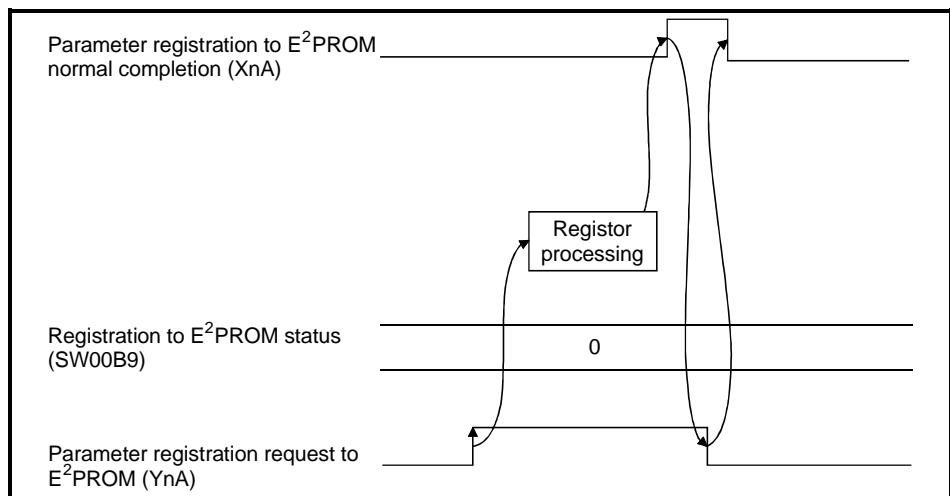
(c) (Xn9) is turned off by turning off (Yn8).



(10) Parameter registration to E²PROM normal completion: XnA

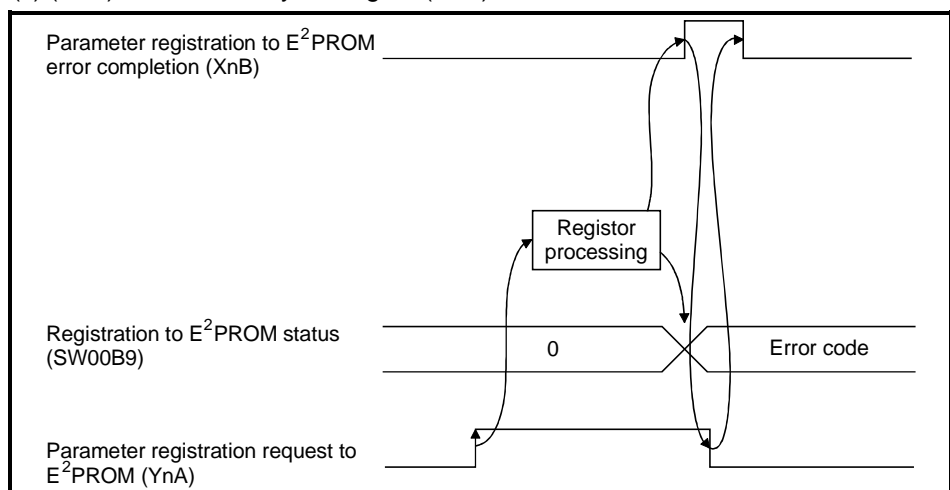
Indicates normal completion in registering parameters at (buffer-memory address 0H to 5FH) to E²PROM requested by the parameter registration request to E²PROM (YnA).

- (a) When (YnA) is turned on, the parameter contents stored in the parameter information area buffer memory (address 0H to 5FH) are checked. If the parameters are registered to E²PROM.
- (b) When registration is normally completed, the signal for "parameter registration to E²PROM normal completion" (XnA) is turned on.
- (c) (XnA) is turned off by turning off (YnA).

(11) Parameter registration to E²PROM error completion: XnB

Indicates abnormal completion in registering parameters at (buffer-memory address 0H to 5FH) to E²PROM requested by the parameter registration request to E²PROM (YnA).

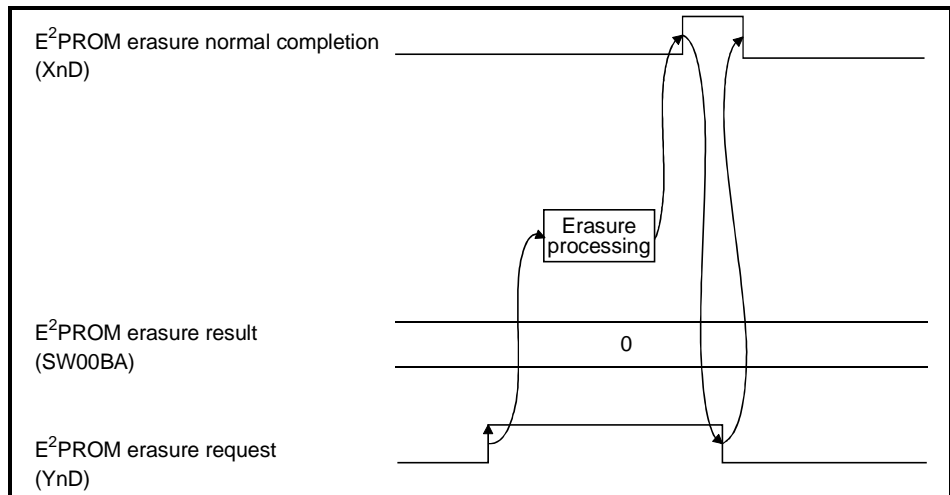
- (a) When the parameter registration request (YnA) to the E²PROM is turned on, the parameters stored in the buffer-memory "parameter information area (address 0H to 5FH)" are written to the E²PROM.
- (b) When the registration ends error, the E²PROM parameter registration error (XnB) turns on and the error code is stored in the buffer memory E²PROM registration status (SW00B9).
- (c) (XnB) is turned off by turning off (YnA).



(12) E²PROM erasure normal completion: XnD

This signal indicates the normal completion of erasing the parameters in the E²PROM in response to the E²PROM erasure request (YnD).

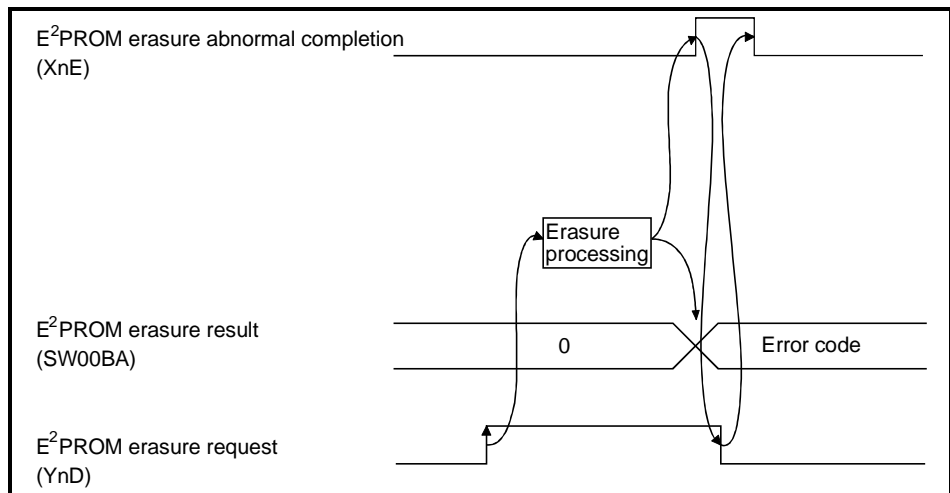
- (a) When the E²PROM erasure request (YnD) turns on, the parameters in the E²PROM are erased.
- (b) On normal completion of erasure, the E²PROM erasure normal completion (XnD) turns on.
- (c) By turning off the E²PROM erasure request (YnD), the E²PROM erasure normal completion (XnD) turns off.



(13) E²PROM erasure abnormal completion: XnE

This signal indicates the abnormal completion of erasing the parameters in the E²PROM in response to the E²PROM erasure request (YnD).

- (a) When the E²PROM erasure request (YnD) turns on, the parameters in the E²PROM are erased.
- (b) On abnormal completion of erasure, the E²PROM erasure abnormal completion (XnE) turns on and the error code is stored into the E²PROM erasure result (SW00BA) of the buffer memory.
- (c) By turning off the E²PROM erasure request (YnD), the E²PROM erasure abnormal completion (XnE) turns off.



(14) Module ready: XnF

Indicates if the module is ready for operation.

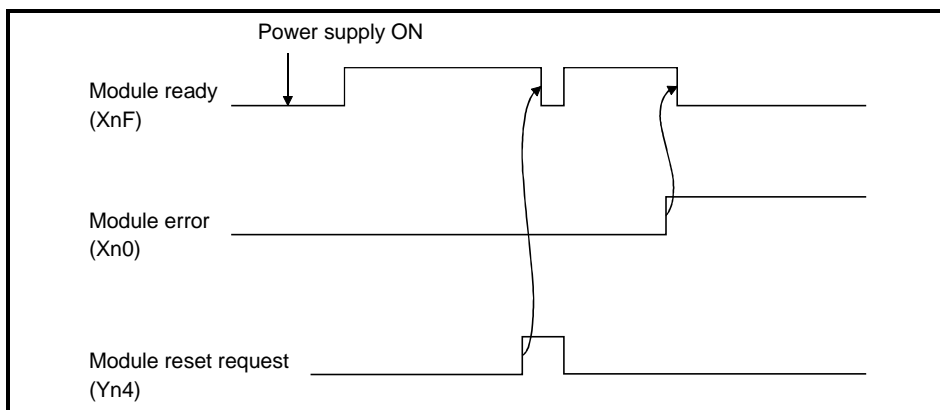
Used as an interlock signal when a sequence program is used to make access to the master/local module.

(a) Turns on automatically when the module becomes ready for operation.

(b) Turns off when one of the following conditions occur:

- There is an error in the module switch settings.
- The module reset request signal (Yn4) is turned on.
- The module error signal (Xn0) is turned on.

If the module is inoperative (XnF is OFF), do not execute the FROM/TO instruction for the module.

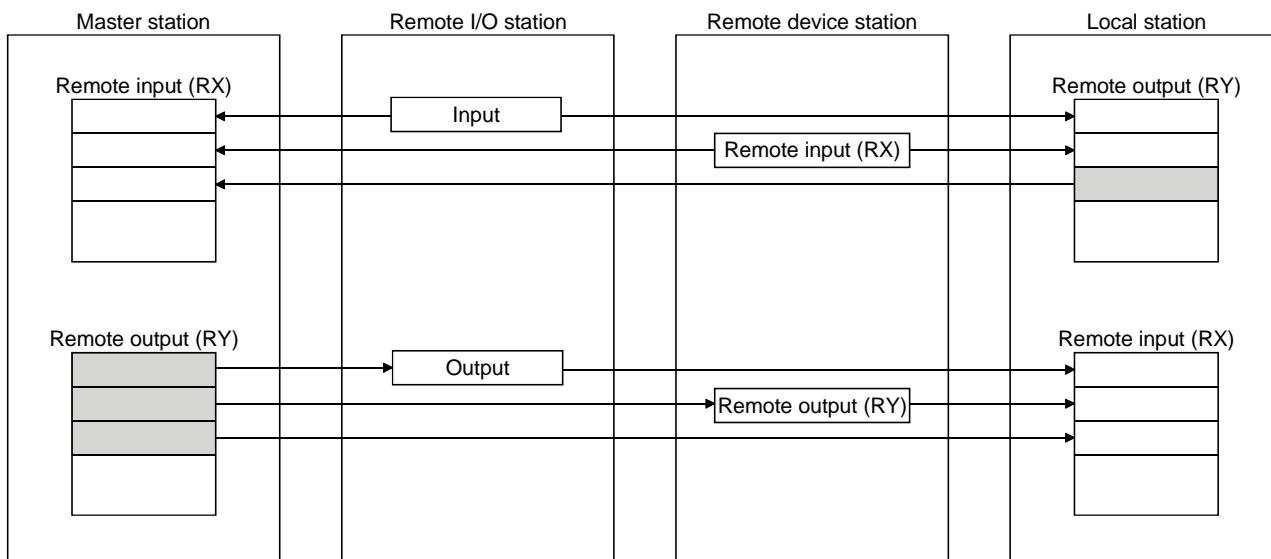
**(15) Refresh command: Yn0**

Indicates if the content of remote output RY (address 160H to 1DFH) in the buffer memory is effective or not. Same meaning for local stations.

For remote input RX and remote register RWr/RWw except remote output RY, refresh is continued independently of this signal.

OFF : Not effective (Sends all-off data.)

ON : Effective (Sends data in "remote output (address 160H to 1DFH)" in the buffer memory.)

**POINT**

(1) Yn0 is set (on) before the data link start up.

(2) Yn0 is turned off when the PC CPU is in the STOP status.

(16) Module reset request: Yn4

Signal used to reset the module for debugging.

The module can be reset individually without resetting the PC CPU.

If you cannot start the remote station earlier than starting the system in any method, resetting the module after the start of the remote station allows the system to start from the initial status securely.

While the module reset request is being executed (Yn4 is ON), do not execute the FROM/TO instruction for the module.

Refer to (5) for signal timing.

(17) Data link startup request from buffer memory parameter: Yn6

Starts data link according to the parameter (address 0H to 5FH) contents in buffer memory.

Do not turn on this signal during RUN of the PLC CPU and during a data link.

If you are going to change any parameter data during RUN of the PLC CPU and during a data link, always turn on SB0002 (data link stop) to stop the data link, change the parameter data, and then turn on this signal to restart the data link.

Refer to (6) and (7) for signal timing.

(18) Data link startup request from E²PROM parameter: Yn8

Starts data link according to the parameter contents registered in E²PROM.

Do not turn on this signal during RUN of the PLC CPU and during a data link.

If you are going to change any parameter data during RUN of the PLC CPU and during a data link, always turn on SB0002 (data link stop) to stop the data link, change the parameter data, and then turn on this signal to restart the data link.

Refer to (8) and (9) for signal timing.

POINT

The factory-set E²PROM values are indefinite. Before making a data link startup using the Yn8 signal, always execute parameter registration using the YnA signal at least once.

(19) Parameter registration request to E²PROM: YnA

The signal for registering parameter (address 0H to 5FH) in buffer memory to E²PROM.

Since the number of times parameters are registered to E²PROM is limited to 10,000, execute parameter registration using the YnA signal by the minimum number of times required.

Refer to (10) and (11) for signal timing.

(20) E²PROM erasure request: YnD

The signal for erasing the parameters in the E²PROM.

Refer to (12) and (13) for the signal timing.

(21) Bank switch specification of buffer memory : Y(n+1) C, Y(n+1)D

Specifies bank switch of buffer memory.

Y(n+1)C	Y(n+1)D	Buffer memory	Application
OFF	OFF	Specify 0 bank	Parameter, status information, etc.
ON	OFF	Specify 1 bank	Intelligent device station Send/recieve buffer
OFF	ON	Specify 2 bank	Intelligent device station Automatic update buffer
ON	ON	—	Prohibited to use

3.5 Buffer Memory

The buffer memory is used to swap data between the master/local module and the PC CPU.

In the PC CPU, the FROM/TO instructions are used to read/write data.

The contents of the buffer memory return to the default values when the power is turned off and the PC CPU is reset.

3.5.1 Buffer memory list

The buffer memory list is shown in Table 3.4.

Table 3.4 (1) Buffer memory list (bank 0)

Address		Item	Details	Read/write possibility	Availability		Reference
Hex.	Dec.				Master station	Local station	
0 _H to 5 _{FH}	0 to 95	Parameter information area	Stores the information (parameters) to execute the data link.	Read/write enabled	○	×	Section 3.5.2 (1)
60 _H to 7 _{FH}	96 to 127	(Prohibited to use) *	—	—	—	—	—
80 _H to CD _H	128 to 205	Parameter information area	Stores the information (parameters) to execute the data link.	Read/write enabled	○	×	Section 15.2.1
CE _H to DF _H	206 to 223	(Prohibited to use) *	—	—	—	—	—
E0 _H to 15 _{FH}	224 to 351	Remote input (RX)	When master station: Stores the input status from the remote/local station.	Read only	○	—	Section 3.5.2 (2)
			When local station: stores the input status from the master station.		—	○	
160 _H to 1D _{FH}	352 to 479	Remote output (RY)	When master station: Stores the output status of the output to the remote/local station.	Write only	○	—	
			When local station: Stores the output status of the output to the master station.	Read/write enabled	—	○	
1E0 _H to 2D _{FH}	480 to 735	Remote register (RWw) (Master station: for sending Local station: for sending/receiving)	When master station: Stores the transmission data to the remote/all local stations.	Write only	○	—	Section 3.5.2 (3)
			When local station: Stores the transmission data to the master/other local stations. Also, stores the received data from the remote/other local stations.	Read/write enabled	—	○	
2E0 _H to 3D _{FH}	736 to 991	Remote register (RWr) (Master station: for receiving Local station: for receiving)	When master station: Stores the received data from the remote/local station.	Write only	○	—	
			When local station: Stores the received data from the master station.		—	○	
3E0 _H to 5D _{FH}	992 to 1503	(Prohibited to use) *	—	—	—	—	—
5E0 _H to 5F _{FH}	1504 to 1535	Link special relay (SB)	Stores the data-link status.	Read/write enabled (write disabled depending on the device)	○	○	Section 3.5.2 (4)
600 _H to 7F _{FH}	1536 to 2047	Link special register (SW)	Stores the data-link status.	Read/write enabled (write disabled depending on the device)	○	○	Section 3.5.2 (5)
800 _H to 9F _{FH}	2048 to 2559	(Prohibited to use) *	—	—	—	—	—
A00 _H to FF _{FH}	2560 to 4095	Random access buffer	Uses for dedicated instruction of RIRD, RIWT, etc.	Read/write enabled	○	○	Section 15.6

○: Usable ×: Prohibited to use

* Do not write to areas that are prohibited to use. An error may occur.

Table 3.4 (2) Buffer memory list (bank 1)

Address		Item	Details	Read/write possibility	Availability		Reference
Hex.	Dec.				Master station	Local station	
0 _H to FFF _H	0 to 4095	Communication buffer	When the transient transmission (communication using communication buffer) is performed with the intelligent device stations, this stores the communication data and control data. The area for each intelligent device station is set with the network parameters.	Read/write enabled	○	○	Section 15.2.1

Table 3.4 (3) Buffer memory list (bank 2)

Address		Item	Details	Read/write possibility	Availability		Reference
Hex.	Dec.				Master station	Local station	
0 _H to FFF _H	0 to 4095	Automatic updating buffer	When the transient transmission (communication using automatic updating buffer) is performed with the intelligent device stations, this stores the automatic updating data. The area for each intelligent device station is set with the network parameters.	Read/write enabled	○	○	Section 15.2.1

3.5.2 Buffer memory details

The details of each item shown in Table 3.4 of Section 3.5.1 is described.

(1) Parameter information area

The conditions to perform data link is set.

Also, these can be registered in the E²PROM.

Table 3.5 Parameter information area list

Address		Item	Description	Default
Hex.	Dec.			
0H	0	(Prohibited to use) *	—	—
1H	1	Number of connected modules	Set the number of connected remote/local station modules. (including reserved stations)	64
2H	2	Number of retries	Set the number of retries to the communication faulty station.	3
3H	3	Number of automatic return modules	Set the number of remote/local stations modules that can return with 1 link scan.	1
4H	4	(Prohibited to use) *	—	—
5H	5	(Prohibited to use) *	—	—
6H	6	Operation specification when CPU is down	Specify the data-link status when there is a master station PC CPU error.	0 (Stop)
7H to FH	7 to 15	(Prohibited to use) *	—	—
10H to 13H	16 to 19	Reserved station specification	Set a reserved station.	0 (No specification)
14H to 17H	20 to 23	Invalid station specification	Specify an invalid station.	0 (No specification)
18H to 1FH	24 to 31	(Prohibited to use) *	—	—
20H to 5FH	32 to 95	Station information	Set the connected remote/local station type.	Station type: Remote I/O station Number of occupied stations: 1 Station numbers: 1 to 64

* Do not write to areas that are prohibited to use. An error may occur.

(a) Number of connected modules

This sets the number of remote/local station modules connected to the master station (including reserved stations).

This is not a station count.

The setting range is "1 to 64 (modules)."

POINT

The station information (address 20H to 5FH) for the specified "number of connected" stations becomes valid.

(b) Number of retries

This sets the number of retries to the remote/local station with a data link error.

The setting range is "1 to 7(times)."

If the remote/local station cannot recover a normal data link after performing specified number of retries, the station becomes a "data-link faulty station."

(c) Number of automatic return modules

This sets the number of remote/local stations that can return to the system during 1 link scan.

The range is "1 to 10 (modules)."

(d) Operation specification when CPU is down

This specifies the data-link status when the master station PC CPU has an error which "stops the error operation".

"0" is stop and "1" is continue.

(e) Reserved station specification

This is set to include the remote/local stations that are not actually connected in the number of connected modules, so that a data link error does not occur.

① When a connected remote/local station is set as a reserved station, the station cannot perform any data link at all.

② Turn on the bit corresponding to the station number to be set as reserved.

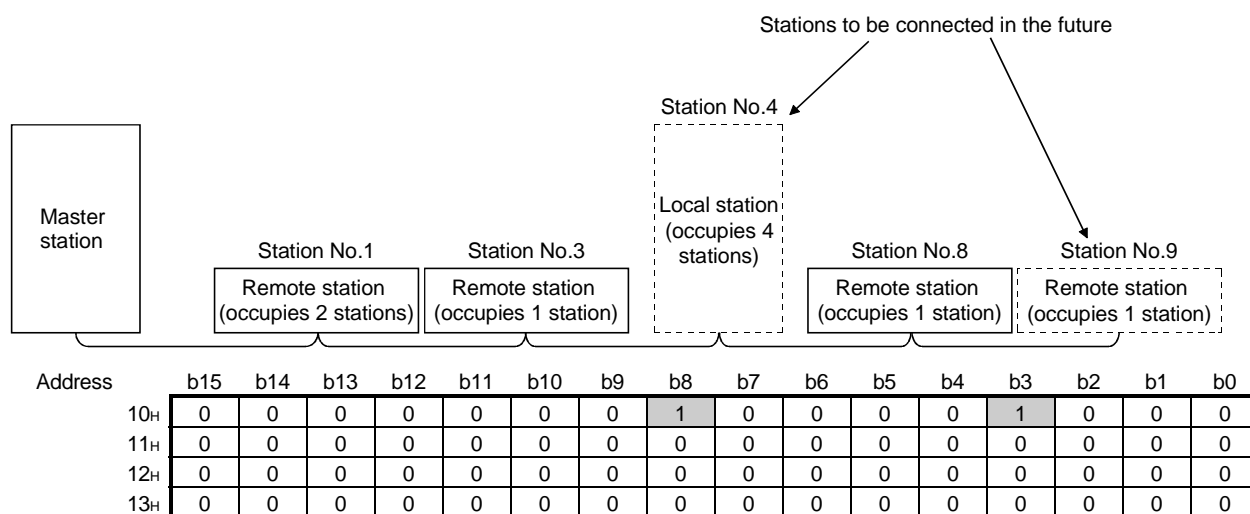
However, for the remote/local station that occupies more than 2 stations, turn on the only bit for the station numbers set by the module's station number setting switch.

1 to 64 in the table below indicate the station numbers.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
10 _H	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
11 _H	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
12 _H	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
13 _H	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49

<Setting example>

When setting a local station with station number 4 and a remote station with station number 9 as reserved in the system configuration below:



(f) Error invalid station specification

This is set so that the remote/local station that can no longer perform data link due to power off, etc. will not be treated as a "data-link faulty station" on the master station and the local station.

Be careful, however, for errors will not be detected.

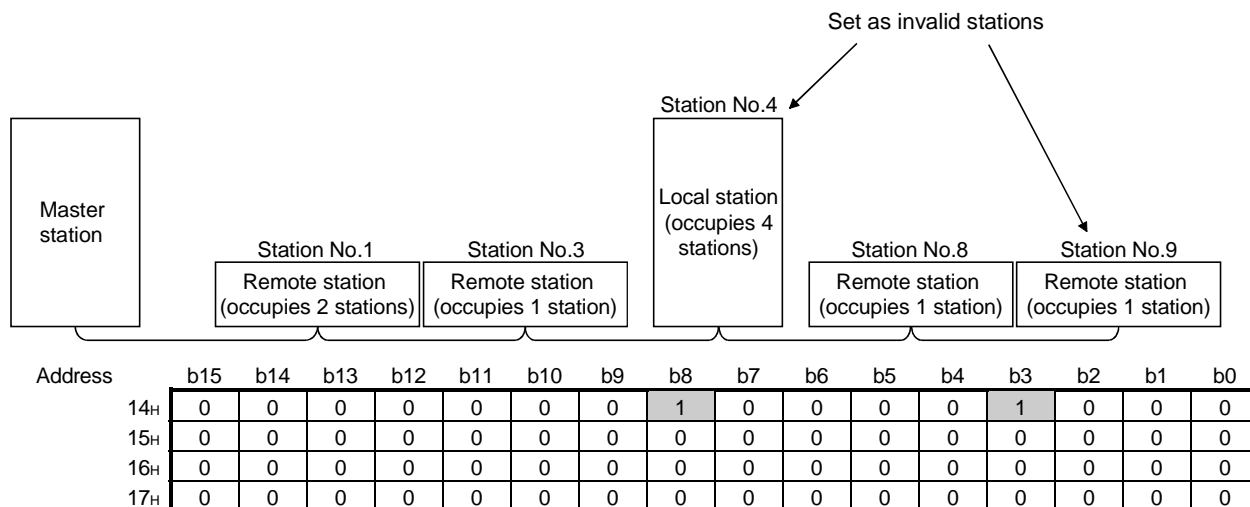
- ① When the same station number is specified as a reserved station, the reserved station specification has the priority.
- ② Turn on the bit corresponding to the station number of the invalid station. However, for remote/local stations that occupy more than 2 stations, turn on the only bit for the station numbers set by the module's station number setting switch.

1 to 64 in the table below indicate the station numbers.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
14 _H	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
15 _H	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
16 _H	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
17 _H	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49

<Setting example>

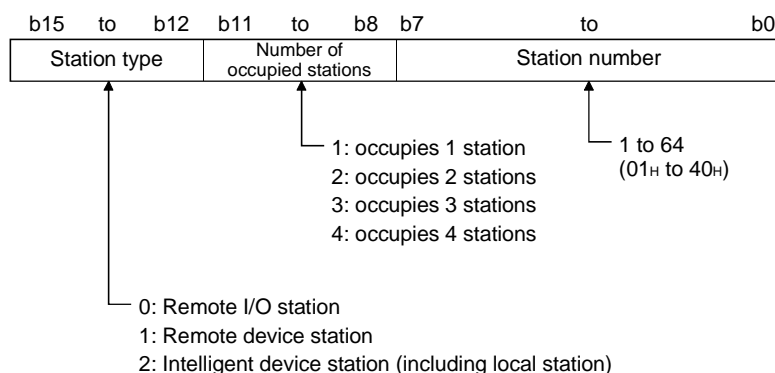
When setting a local station with station number 4 and a remote station with station number 9 as invalid in the system configuration below:



(g) Station information

This sets the remote/local station type for connected remote/local stations and reserved stations.

① The data configuration to be set is shown below.



② The buffer memory address for each module is shown in the table below.

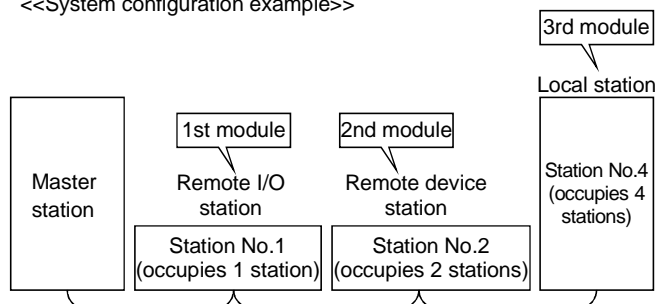
For example, when setting for the 25th module, write to the buffer memory address "38H."

Module	Address	Module	Address	Module	Address	Module	Address
1st module	20H	17th module	30H	33th module	40H	49th module	50H
2nd module	21H	18th module	31H	34th module	41H	50th module	51H
3rd module	22H	19th module	32H	35th module	42H	51th module	52H
4th module	23H	20th module	33H	36th module	43H	52th module	53H
5th module	24H	21th module	34H	37th module	44H	53th module	54H
6th module	25H	22th module	35H	38th module	45H	54th module	55H
7th module	26H	23th module	36H	39th module	46H	55th module	56H
8th module	27H	24th module	37H	40th module	47H	56th module	57H
9th module	28H	25th module	38H	41th module	48H	57th module	58H
10th module	29H	26th module	39H	42th module	49H	58th module	59H
11th module	2AH	27th module	3AH	43th module	4AH	59th module	5AH
12th module	2BH	28th module	3BH	44th module	4BH	60th module	5BH
13th module	2CH	29th module	3CH	45th module	4CH	61th module	5CH
14th module	2DH	30th module	3DH	46th module	4DH	62th module	5DH
15th module	2EH	31th module	3EH	47th module	4EH	63th module	5EH
16th module	2FH	32th module	3FH	48th module	4FH	64th module	5FH

<Setting example>

When connecting a remote I/O station, a remote device station and a local station:

<<System configuration example>>



<<Station information setting>>

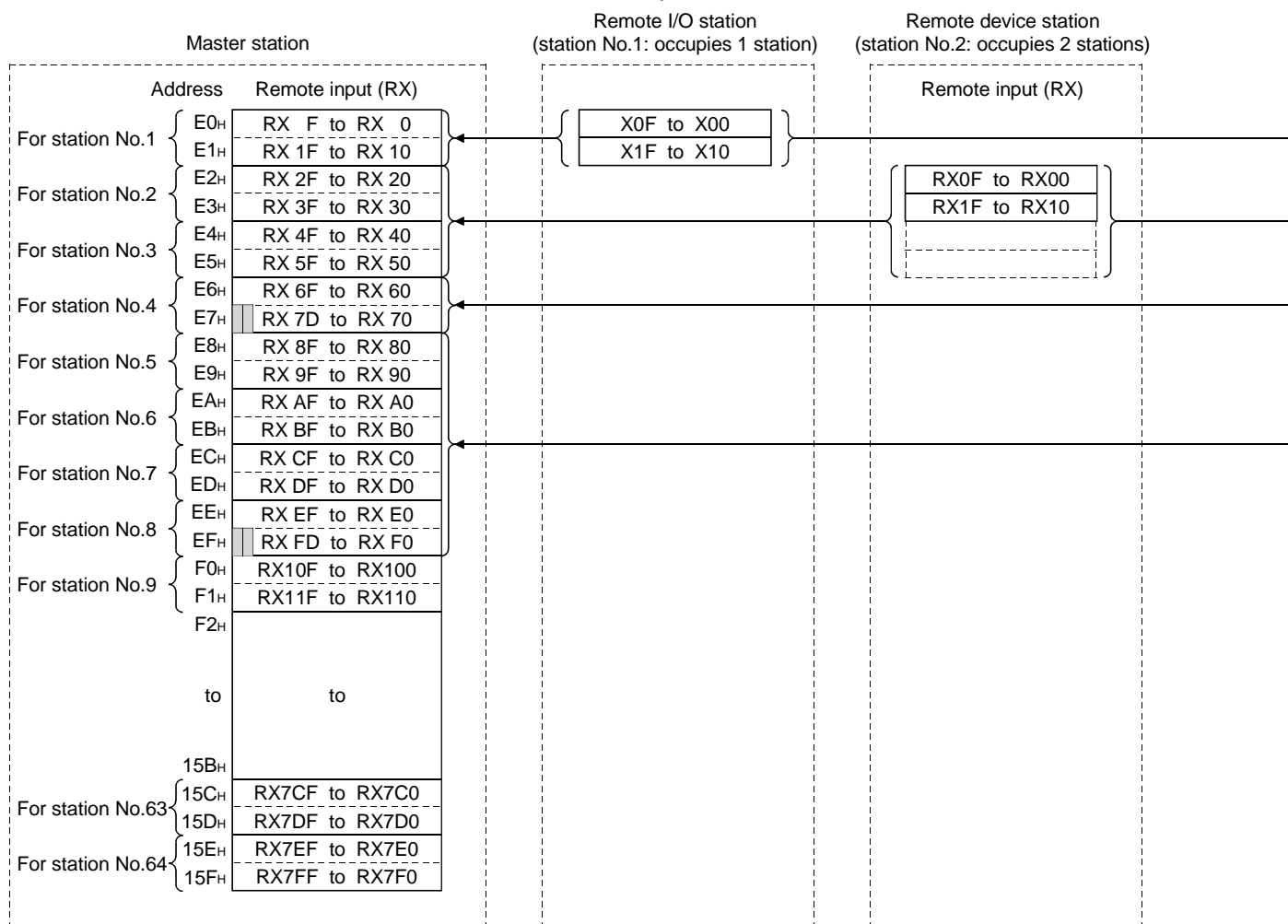
Station type	Number of occupied stations	Station number
Address 20H	0H	1H
21H	1H	2H
22H	2H	4H

(2) Remote input (RX) and remote output (RY)

(a) Master station ← Remote I/O station/remote device station/local station

① Master station

- Input status from remote I/O station, remote device station (RX) and local station (RY) are stored.
- Two words are used per station.



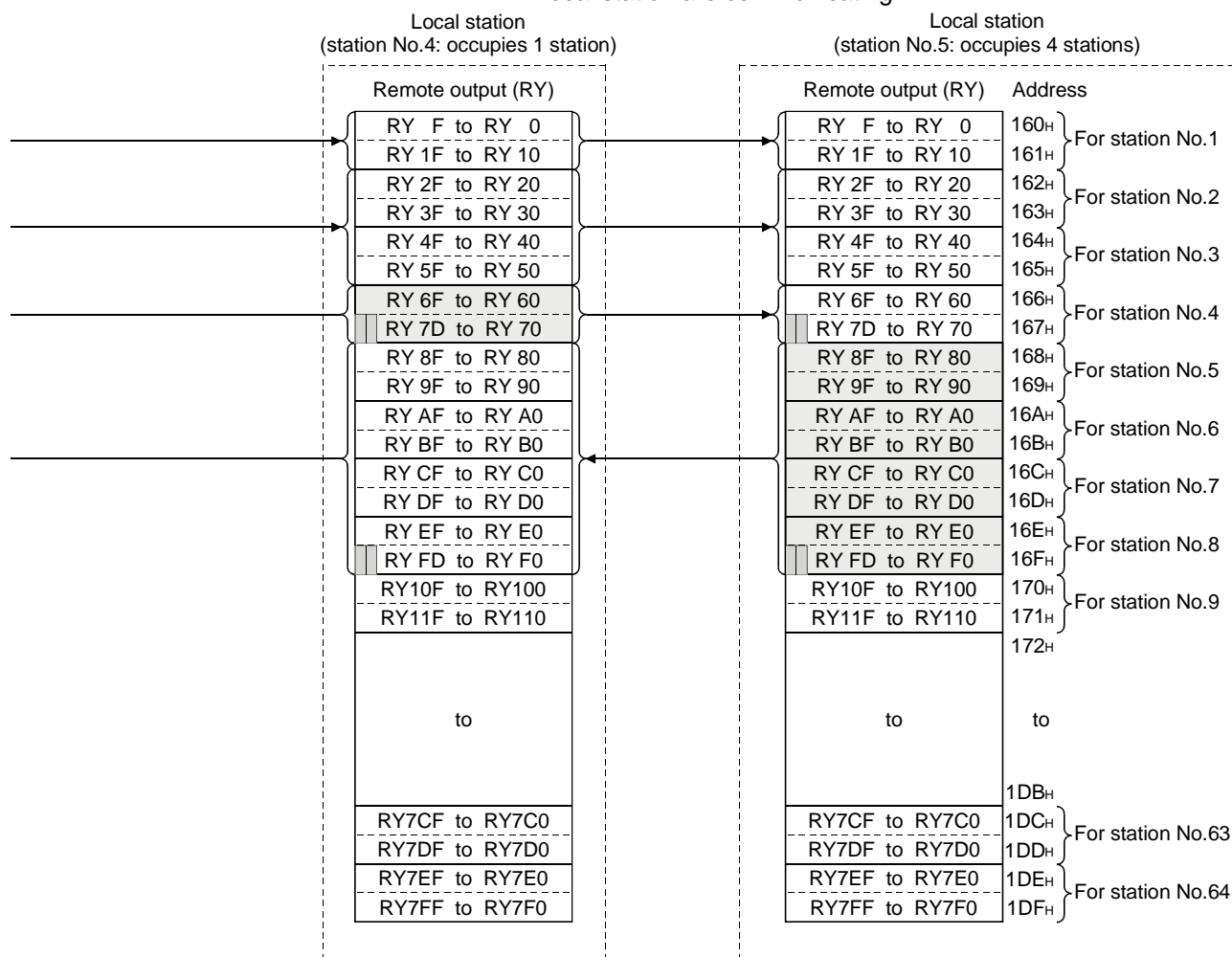
Master station's buffer memory and station number correspondence table

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	E0 _H to E1 _H	14	FA _H to FB _H	27	114 _H to 115 _H	40	12E _H to 12F _H	53	148 _H to 149 _H
2	E2 _H to E3 _H	15	FC _H to FD _H	28	116 _H to 117 _H	41	130 _H to 131 _H	54	14A _H to 14B _H
3	E4 _H to E5 _H	16	FE _H to FF _H	29	118 _H to 119 _H	42	132 _H to 133 _H	55	14C _H to 14D _H
4	E6 _H to E7 _H	17	100 _H to 101 _H	30	11A _H to 11B _H	43	134 _H to 135 _H	56	14E _H to 14F _H
5	E8 _H to E9 _H	18	102 _H to 103 _H	31	11C _H to 11D _H	44	136 _H to 137 _H	57	150 _H to 151 _H
6	EA _H to EB _H	19	104 _H to 105 _H	32	11E _H to 11F _H	45	138 _H to 139 _H	58	152 _H to 153 _H
7	EC _H to ED _H	20	106 _H to 107 _H	33	120 _H to 121 _H	46	13A _H to 13B _H	59	154 _H to 155 _H
8	EE _H to EF _H	21	108 _H to 109 _H	34	122 _H to 123 _H	47	13C _H to 13D _H	60	156 _H to 157 _H
9	F0 _H to F1 _H	22	10A _H to 10B _H	35	124 _H to 125 _H	48	13E _H to 13F _H	61	158 _H to 159 _H
10	F2 _H to F3 _H	23	10C _H to 10D _H	36	126 _H to 127 _H	49	140 _H to 141 _H	62	15A _H to 15B _H
11	F4 _H to F5 _H	24	10E _H to 10F _H	37	128 _H to 129 _H	50	142 _H to 143 _H	63	15C _H to 15D _H
12	F6 _H to F7 _H	25	110 _H to 111 _H	38	12A _H to 12B _H	51	144 _H to 145 _H	64	15E _H to 15F _H
13	F8 _H to F9 _H	26	112 _H to 113 _H	39	12C _H to 12D _H	52	146 _H to 147 _H	—	—

② Local station

- Data to be sent to master station is stored in the remote output (RY) corresponding to the host station.
- Input status from remote I/O station, remote device station (RX) and other local station are stored.
- Two words are used per station.

▮ ... The last 2 bits cannot be used when the master station and the local station are communicating.



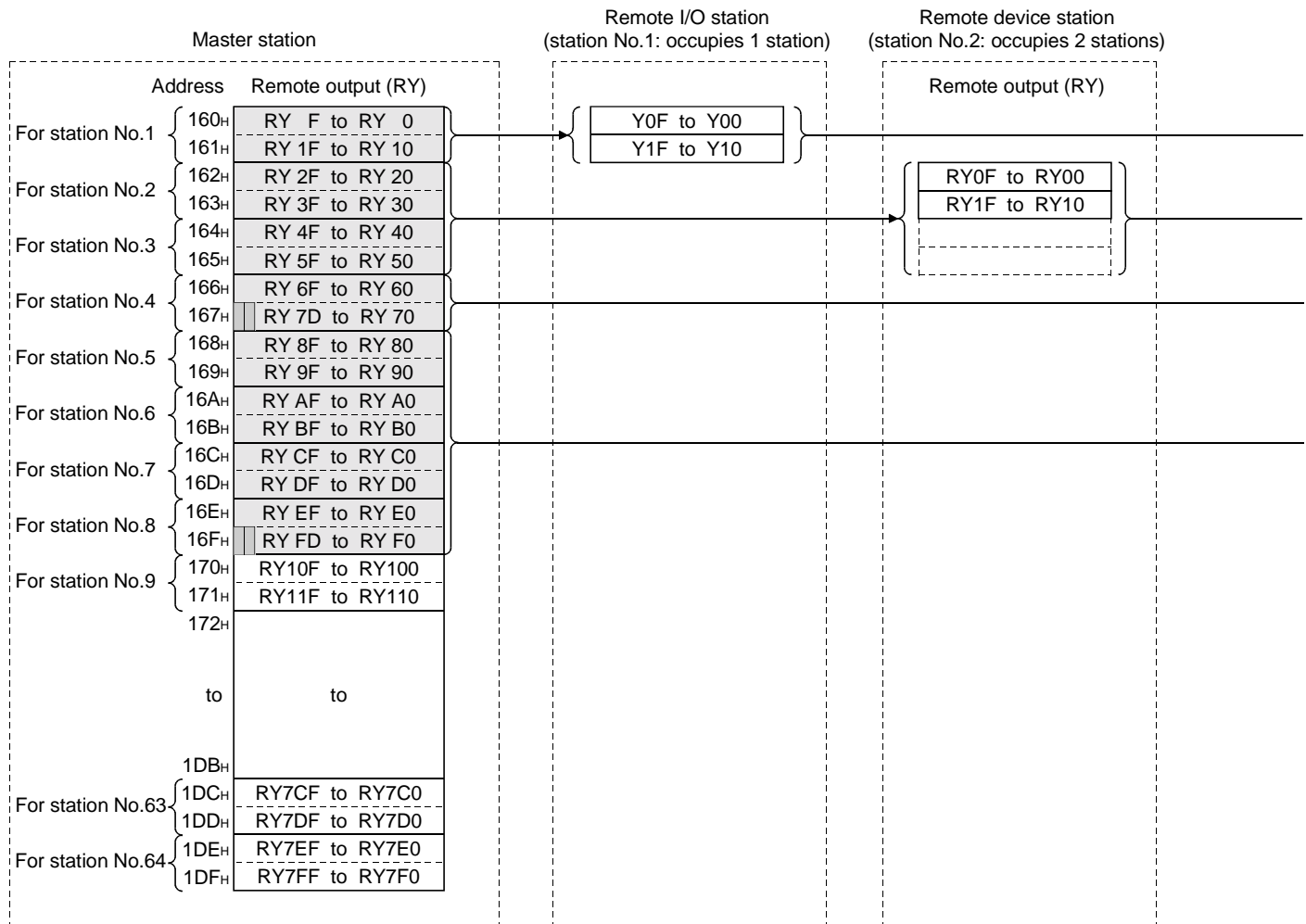
Local station's buffer memory address and station number correspondence table

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	160 _H to 161 _H	14	17A _H to 17B _H	27	194 _H to 195 _H	40	1AE _H to 1AF _H	53	1C8 _H to 1C9 _H
2	162 _H to 163 _H	15	17C _H to 17D _H	28	196 _H to 197 _H	41	1B0 _H to 1B1 _H	54	1CA _H to 1CB _H
3	164 _H to 165 _H	16	17E _H to 17F _H	29	198 _H to 199 _H	42	1B2 _H to 1B3 _H	55	1CC _H to 1CD _H
4	166 _H to 167 _H	17	180 _H to 181 _H	30	19A _H to 19B _H	43	1B4 _H to 1B5 _H	56	1CE _H to 1CF _H
5	168 _H to 169 _H	18	182 _H to 183 _H	31	19C _H to 19D _H	44	1B6 _H to 1B7 _H	57	1D0 _H to 1D1 _H
6	16A _H to 16B _H	19	184 _H to 185 _H	32	19E _H to 19F _H	45	1B8 _H to 1B9 _H	58	1D2 _H to 1D3 _H
7	16C _H to 16D _H	20	186 _H to 187 _H	33	1A0 _H to 1A1 _H	46	1BA _H to 1BB _H	59	1D4 _H to 1D5 _H
8	16E _H to 16F _H	21	188 _H to 189 _H	34	1A2 _H to 1A3 _H	47	1BC _H to 1BD _H	60	1D6 _H to 1D7 _H
9	170 _H to 171 _H	22	18A _H to 18B _H	35	1A4 _H to 1A5 _H	48	1BE _H to 1BF _H	61	1D8 _H to 1D9 _H
10	172 _H to 173 _H	23	18C _H to 18D _H	36	1A6 _H to 1A7 _H	49	1C0 _H to 1C1 _H	62	1DA _H to 1DB _H
11	174 _H to 175 _H	24	18E _H to 18F _H	37	1A8 _H to 1A9 _H	50	1C2 _H to 1C3 _H	63	1DC _H to 1DD _H
12	176 _H to 177 _H	25	190 _H to 191 _H	38	1AA _H to 1AB _H	51	1C4 _H to 1C5 _H	64	1DE _H to 1DF _H
13	178 _H to 179 _H	26	192 _H to 193 _H	39	1AC _H to 1AD _H	52	1C6 _H to 1C7 _H	—	—

(b) Master station → remote I/O station/remote device station/local station

① Master station

- Output status to remote I/O station, remote device station (RY) and all local stations (RX) are stored.
- Two words are used per station.



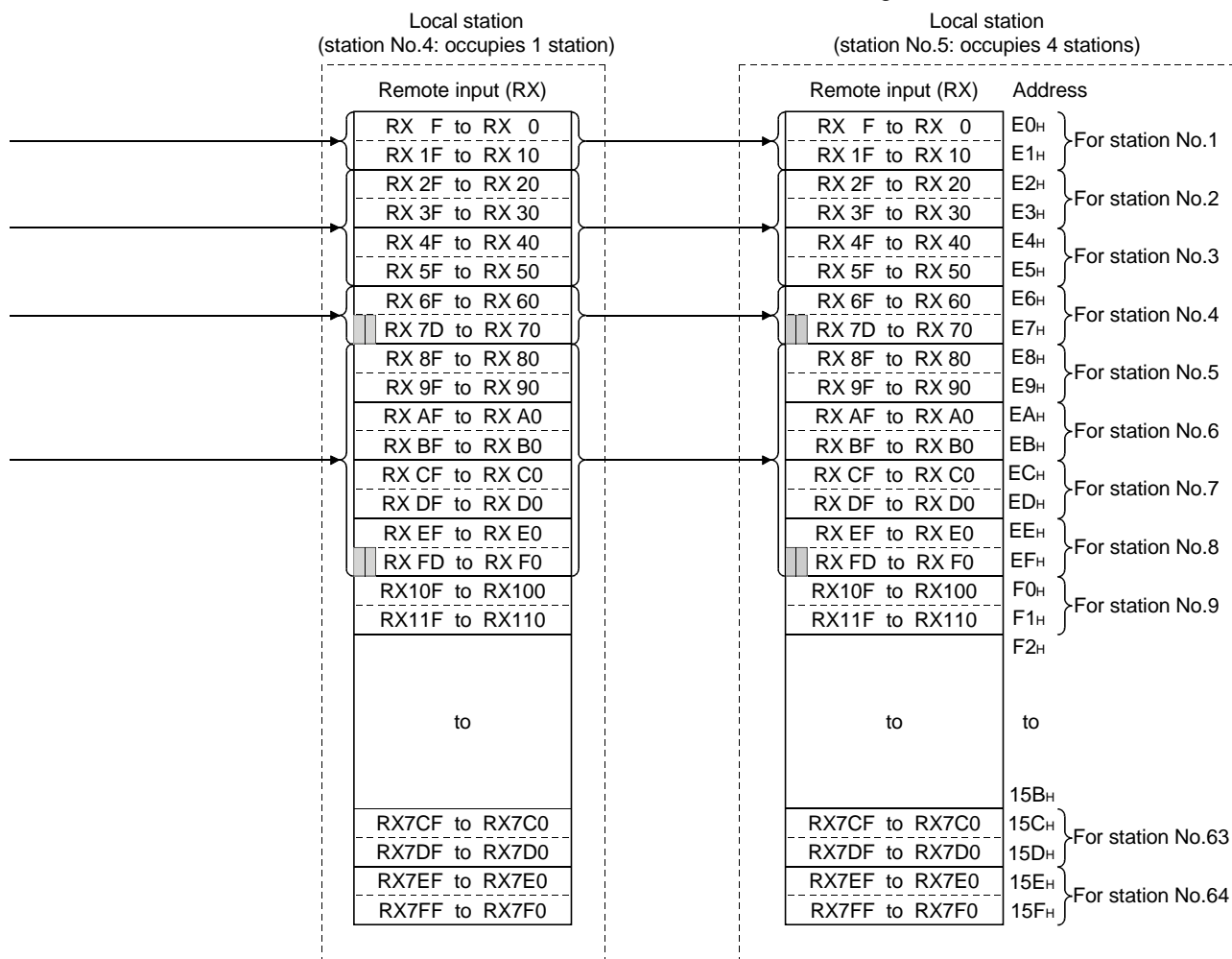
Master station's buffer memory and station number correspondence table

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	160 _H to 161 _H	14	17A _H to 17B _H	27	194 _H to 195 _H	40	1AE _H to 1AF _H	53	1C8 _H to 1C9 _H
2	162 _H to 163 _H	15	17C _H to 17D _H	28	196 _H to 197 _H	41	1B0 _H to 1B1 _H	54	1CA _H to 1CB _H
3	164 _H to 165 _H	16	17E _H to 17F _H	29	198 _H to 199 _H	42	1B2 _H to 1B3 _H	55	1CC _H to 1CD _H
4	166 _H to 167 _H	17	180 _H to 181 _H	30	19A _H to 19B _H	43	1B4 _H to 1B5 _H	56	1CE _H to 1CF _H
5	168 _H to 169 _H	18	182 _H to 183 _H	31	19C _H to 19D _H	44	1B6 _H to 1B7 _H	57	1D0 _H to 1D1 _H
6	16A _H to 16B _H	19	184 _H to 185 _H	32	19E _H to 19F _H	45	1B8 _H to 1B9 _H	58	1D2 _H to 1D3 _H
7	16C _H to 16D _H	20	186 _H to 187 _H	33	1A0 _H to 1A1 _H	46	1BA _H to 1BB _H	59	1D4 _H to 1D5 _H
8	16E _H to 16F _H	21	188 _H to 189 _H	34	1A2 _H to 1A3 _H	47	1BC _H to 1BD _H	60	1D6 _H to 1D7 _H
9	170 _H to 171 _H	22	18A _H to 18B _H	35	1A4 _H to 1A5 _H	48	1BE _H to 1BF _H	61	1D8 _H to 1D9 _H
10	172 _H to 173 _H	23	18C _H to 18D _H	36	1A6 _H to 1A7 _H	49	1C0 _H to 1C1 _H	62	1DA _H to 1DB _H
11	174 _H to 175 _H	24	18E _H to 18F _H	37	1A8 _H to 1A9 _H	50	1C2 _H to 1C3 _H	63	1DC _H to 1DD _H
12	176 _H to 177 _H	25	190 _H to 191 _H	38	1AA _H to 1AB _H	51	1C4 _H to 1C5 _H	64	1DE _H to 1DF _H
13	178 _H to 179 _H	26	192 _H to 193 _H	39	1AC _H to 1AD _H	52	1C6 _H to 1C7 _H	—	—

② Local station

- Data received from remote I/O station, remote device station (RY) and master station (RY) are stored.
- Two words are used per station.

▮ ... The last 2 bits cannot be used when the master station and the local station are communicating.



Local station's buffer memory address and station number correspondence table

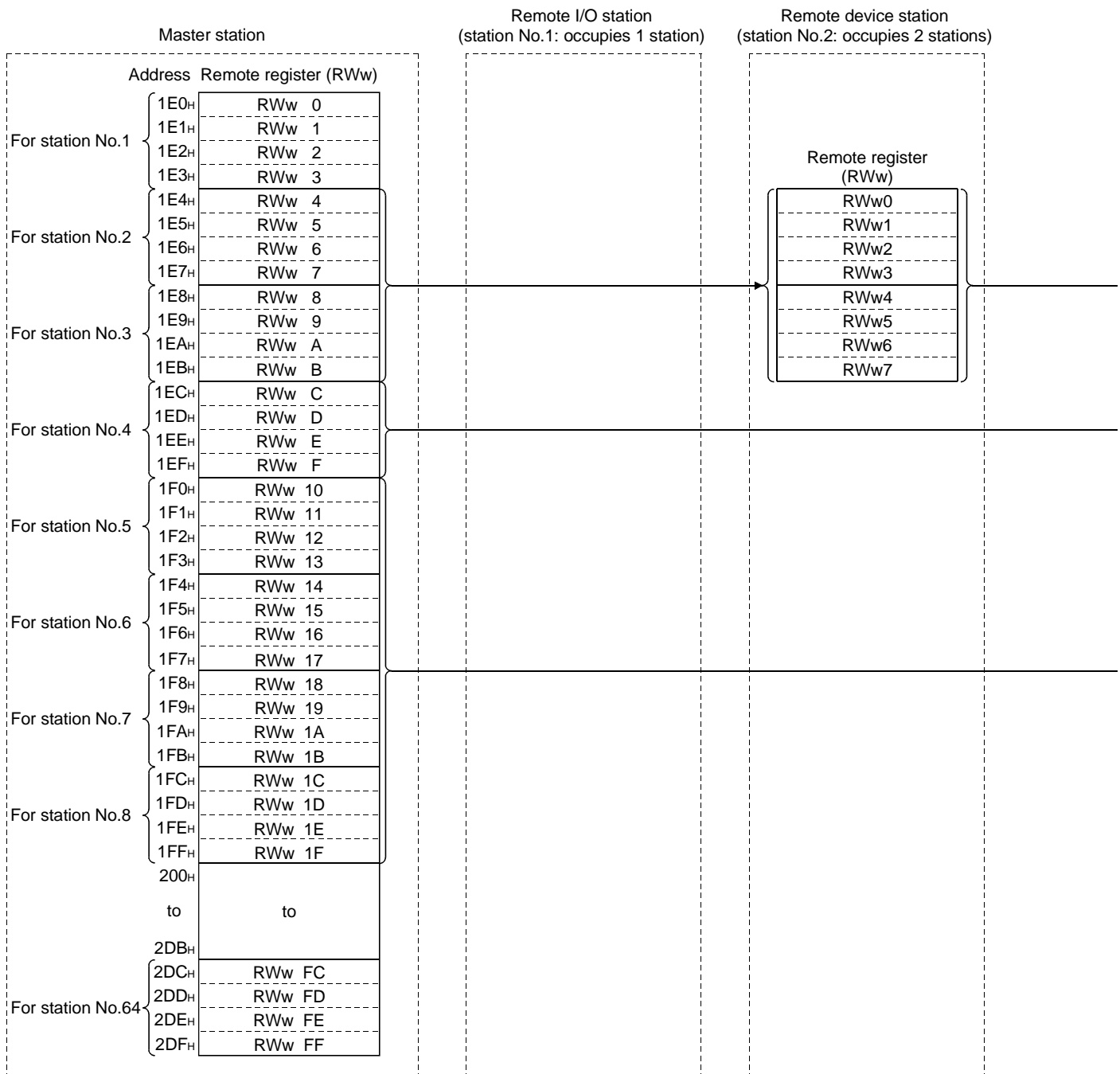
Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	E0H to E1H	14	FAH to FBH	27	114H to 115H	40	12EH to 12FH	53	148H to 149H
2	E2H to E3H	15	FBH to FDH	28	116H to 117H	41	130H to 131H	54	14AH to 14BH
3	E4H to E5H	16	FEH to FFH	29	118H to 119H	42	132H to 133H	55	14CH to 14DH
4	E6H to E7H	17	100H to 101H	30	11AH to 11BH	43	134H to 135H	56	14EH to 14FH
5	E8H to E9H	18	102H to 103H	31	11CH to 11DH	44	136H to 137H	57	150H to 151H
6	EAH to EBH	19	104H to 105H	32	11EH to 11FH	45	138H to 139H	58	152H to 153H
7	ECH to EDH	20	106H to 107H	33	120H to 121H	46	13AH to 13BH	59	154H to 155H
8	EEH to EFH	21	108H to 109H	34	122H to 123H	47	13CH to 13DH	60	156H to 157H
9	F0H to F1H	22	10AH to 10BH	35	124H to 125H	48	13EH to 13FH	61	158H to 159H
10	F2H to F3H	23	10CH to 10DH	36	126H to 127H	49	140H to 141H	62	15AH to 15BH
11	F4H to F5H	24	10EH to 10FH	37	128H to 129H	50	142H to 143H	63	15CH to 15DH
12	F6H to F7H	25	110H to 111H	38	12AH to 12BH	51	144H to 145H	64	15EH to 15FH
13	F8H to F9H	26	112H to 113H	39	12CH to 12DH	52	146H to 147H	—	—

(3) Remote register (RWw) and remote register (RWr)

(a) Master station (RWw) → Remote device station (RWw)/
local station (RWr)

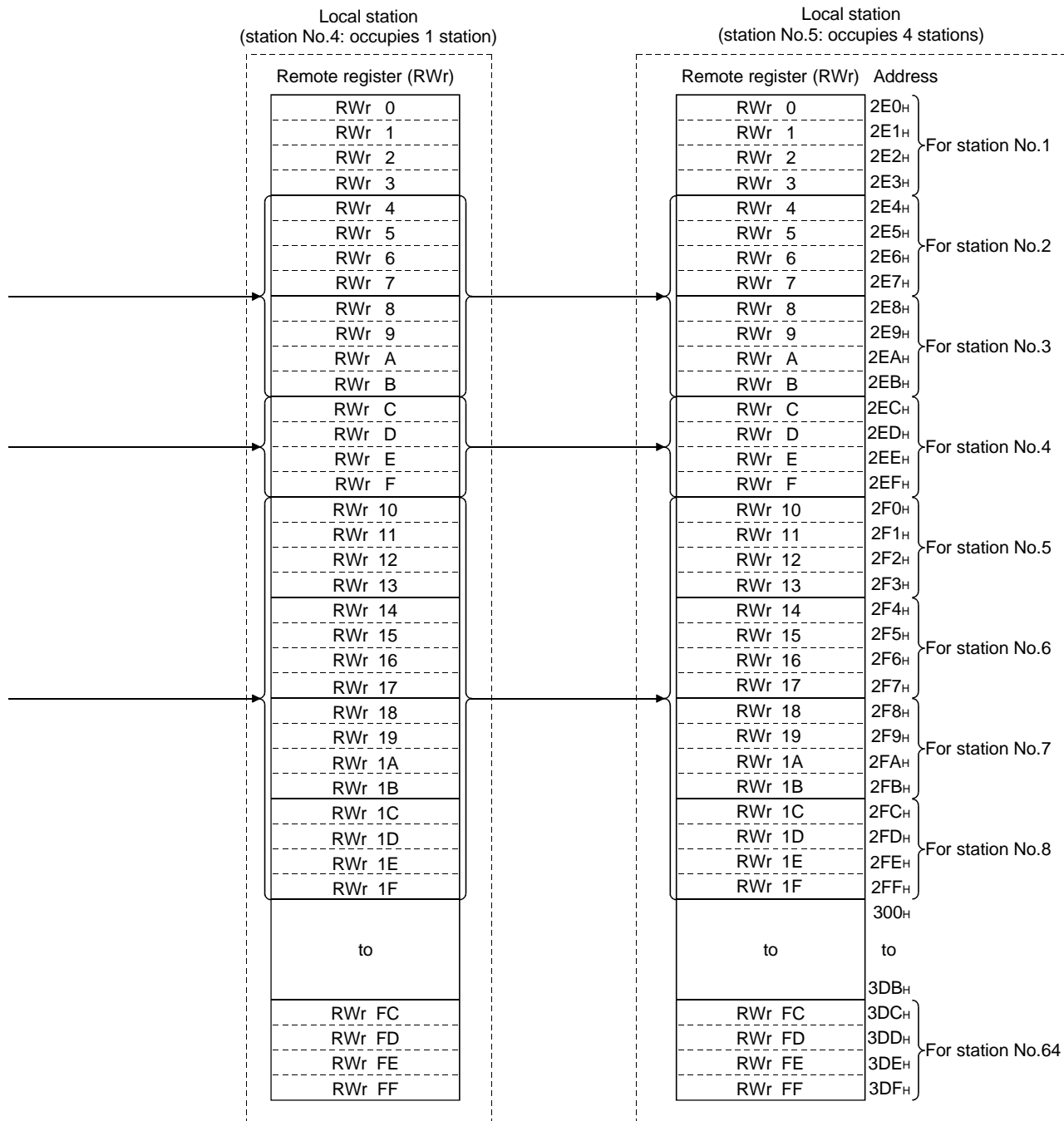
① Master station

- Data to be sent to remote register at remote device station (RWw) and remote registers of all local stations (RWr) are stored.
- Four words are used per station.



② Local station

- Data sent to the remote register(RWw) of remote device station can also be received.
- Four words are used per station.



Following tables show the relationship between station numbers and buffer memory addresses used.

[Master station]

Station number and buffer memory correspondence table

Station number	Buffer memory address	Station number	Buffer memory address
1	1E0 _H to 1E3 _H	33	260 _H to 263 _H
2	1E4 _H to 1E7 _H	34	264 _H to 267 _H
3	1E8 _H to 1EB _H	35	268 _H to 26B _H
4	1EC _H to 1EF _H	36	26C _H to 26F _H
5	1F0 _H to 1F3 _H	37	270 _H to 273 _H
6	1F4 _H to 1F7 _H	38	274 _H to 277 _H
7	1F8 _H to 1FB _H	39	278 _H to 27B _H
8	1FC _H to 1FF _H	40	27C _H to 27F _H
9	200 _H to 203 _H	41	280 _H to 283 _H
10	204 _H to 207 _H	42	284 _H to 287 _H
11	208 _H to 20B _H	43	288 _H to 28B _H
12	20C _H to 20F _H	44	28C _H to 28F _H
13	210 _H to 213 _H	45	290 _H to 293 _H
14	214 _H to 217 _H	46	294 _H to 297 _H
15	218 _H to 21B _H	47	298 _H to 29B _H
16	21C _H to 21F _H	48	29C _H to 29F _H
17	220 _H to 223 _H	49	2A0 _H to 2A3 _H
18	224 _H to 227 _H	50	2A4 _H to 2A7 _H
19	228 _H to 22B _H	51	2A8 _H to 2AB _H
20	22C _H to 22F _H	52	2AC _H to 2AF _H
21	230 _H to 233 _H	53	2B0 _H to 2B3 _H
22	234 _H to 237 _H	54	2B4 _H to 2B7 _H
23	238 _H to 23B _H	55	2B8 _H to 2BB _H
24	23C _H to 23F _H	56	2BC _H to 2BF _H
25	240 _H to 243 _H	57	2C0 _H to 2C3 _H
26	244 _H to 247 _H	58	2C4 _H to 2C7 _H
27	248 _H to 24B _H	59	2C8 _H to 2CB _H
28	24C _H to 24F _H	60	2CC _H to 2CF _H
29	250 _H to 253 _H	61	2D0 _H to 2D3 _H
30	254 _H to 257 _H	62	2D4 _H to 2D7 _H
31	258 _H to 25B _H	63	2D8 _H to 2DB _H
32	25C _H to 25F _H	64	2DC _H to 2DF _H

[Local station]

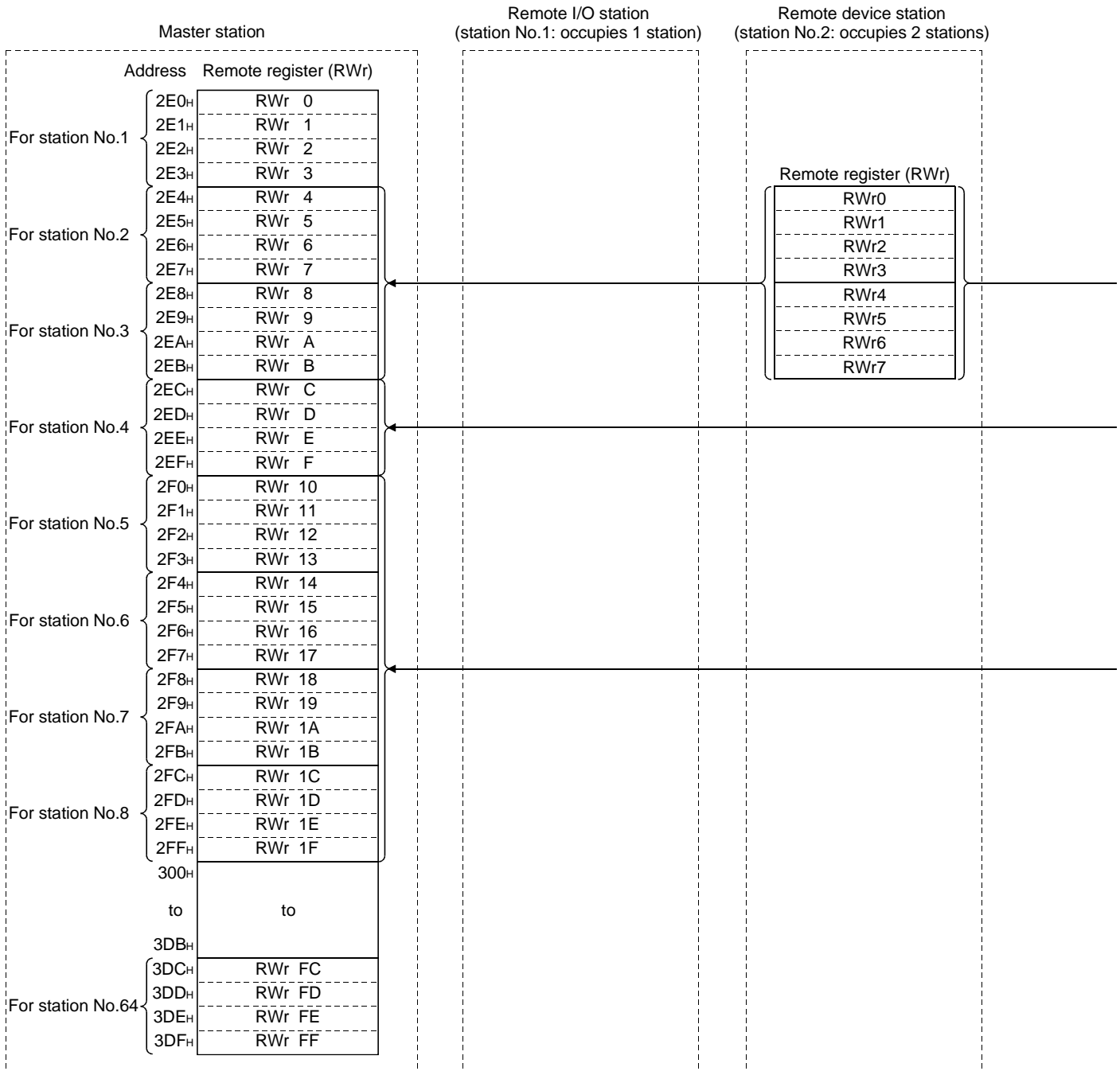
Station number and buffer memory correspondence table

Station number	Buffer memory address	Station number	Buffer memory address
1	2E0 _H to 2E3 _H	33	360 _H to 363 _H
2	2E4 _H to 2E7 _H	34	364 _H to 367 _H
3	2E8 _H to 2EB _H	35	368 _H to 36B _H
4	2EC _H to 2EF _H	36	36C _H to 36F _H
5	2F0 _H to 2F3 _H	37	370 _H to 373 _H
6	2F4 _H to 2F7 _H	38	374 _H to 377 _H
7	2F8 _H to 2FB _H	39	378 _H to 37B _H
8	2FC _H to 2FF _H	40	37C _H to 37F _H
9	300 _H to 303 _H	41	380 _H to 383 _H
10	304 _H to 307 _H	42	384 _H to 387 _H
11	308 _H to 30B _H	43	388 _H to 38B _H
12	30C _H to 30F _H	44	38C _H to 38F _H
13	310 _H to 313 _H	45	390 _H to 393 _H
14	314 _H to 317 _H	46	394 _H to 397 _H
15	318 _H to 31B _H	47	398 _H to 39B _H
16	31C _H to 31F _H	48	39C _H to 39F _H
17	320 _H to 323 _H	49	3A0 _H to 3A3 _H
18	324 _H to 327 _H	50	3A4 _H to 3A7 _H
19	328 _H to 32B _H	51	3A8 _H to 3AB _H
20	32C _H to 32F _H	52	3AC _H to 3AF _H
21	330 _H to 333 _H	53	3B0 _H to 3B3 _H
22	334 _H to 337 _H	54	3B4 _H to 3B7 _H
23	338 _H to 33B _H	55	3B8 _H to 3BB _H
24	33C _H to 33F _H	56	3BC _H to 3BF _H
25	340 _H to 343 _H	57	3C0 _H to 3C3 _H
26	344 _H to 347 _H	58	3C4 _H to 3C7 _H
27	348 _H to 34B _H	59	3C8 _H to 3CB _H
28	34C _H to 34F _H	60	3CC _H to 3CF _H
29	350 _H to 353 _H	61	3D0 _H to 3D3 _H
30	354 _H to 357 _H	62	3D4 _H to 3D7 _H
31	358 _H to 35B _H	63	3D8 _H to 3DB _H
32	35C _H to 35F _H	64	3DC _H to 3DF _H

(b) Master station (RW_r) ← Remote device station (RW_r)/
local station (RW_w)

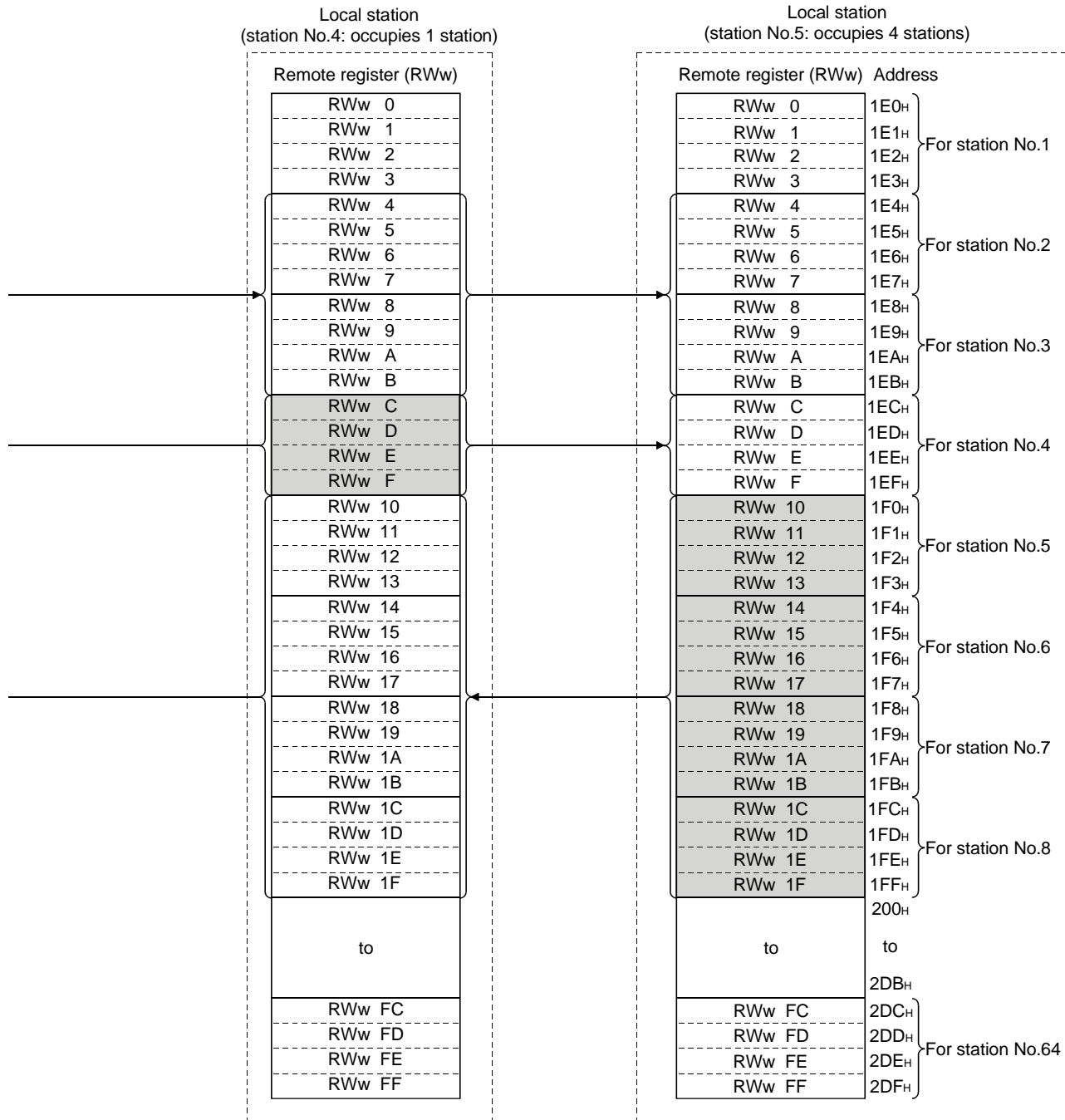
① Master station

- Data to be sent to remote register (RW_r) of remote device station and remote register (RW_w) of local station are stored.
- Four words are used per station.



② Local station

- Data is sent to the master station and other local stations by storing in the address corresponding to the host station number.
- Data in the remote register (RW_r) of remote device station can also be received.



Following tables show the relationship between station numbers and buffer memory addresses used.

[Master station]

Station number and buffer memory correspondence table

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	2E0 _H to 2E3 _H	14	314 _H to 317 _H	27	348 _H to 34B _H	40	37C _H to 37F _H	53	3B0 _H to 3B3 _H
2	2E4 _H to 2E7 _H	15	318 _H to 31B _H	28	34C _H to 34F _H	41	380 _H to 383 _H	54	3B4 _H to 3B7 _H
3	2E8 _H to 2EB _H	16	31C _H to 31F _H	29	350 _H to 353 _H	42	384 _H to 387 _H	55	3B8 _H to 3BB _H
4	2EC _H to 2EF _H	17	320 _H to 323 _H	30	354 _H to 357 _H	43	388 _H to 38B _H	56	3BC _H to 3BF _H
5	2F0 _H to 2F3 _H	18	324 _H to 327 _H	31	358 _H to 35B _H	44	38C _H to 38F _H	57	3C0 _H to 3C3 _H
6	2F4 _H to 2F7 _H	19	328 _H to 32B _H	32	35C _H to 35F _H	45	390 _H to 393 _H	58	3C4 _H to 3C7 _H
7	2F8 _H to 2FB _H	20	32C _H to 32F _H	33	360 _H to 363 _H	46	394 _H to 397 _H	59	3C8 _H to 3CB _H
8	2FC _H to 2FF _H	21	330 _H to 333 _H	34	364 _H to 367 _H	47	398 _H to 39B _H	60	3CC _H to 3CF _H
9	300 _H to 303 _H	22	334 _H to 337 _H	35	368 _H to 36B _H	48	39C _H to 39F _H	61	3D0 _H to 3D3 _H
10	304 _H to 307 _H	23	338 _H to 33B _H	36	36C _H to 36F _H	49	3A0 _H to 3A3 _H	62	3D4 _H to 3D7 _H
11	308 _H to 30B _H	24	33C _H to 33F _H	37	370 _H to 373 _H	50	3A4 _H to 3A7 _H	63	3D8 _H to 3DB _H
12	30C _H to 30F _H	25	340 _H to 343 _H	38	374 _H to 377 _H	51	3A8 _H to 3AB _H	64	3DC _H to 3DF _H
13	310 _H to 313 _H	26	344 _H to 347 _H	39	378 _H to 37B _H	52	3AC _H to 3AF _H	—	—

[Local station]

Station number and buffer memory correspondence table

Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address	Station number	Buffer memory address
1	1E0 _H to 1E3 _H	14	214 _H to 217 _H	27	248 _H to 24B _H	40	27C _H to 27F _H	53	2B0 _H to 2B3 _H
2	1E4 _H to 1E7 _H	15	218 _H to 21B _H	28	24C _H to 24F _H	41	280 _H to 283 _H	54	2B4 _H to 2B7 _H
3	1E8 _H to 1EB _H	16	21C _H to 21F _H	29	250 _H to 253 _H	42	284 _H to 287 _H	55	2B8 _H to 2BB _H
4	1EC _H to 1EF _H	17	220 _H to 223 _H	30	254 _H to 257 _H	43	288 _H to 28B _H	56	2BC _H to 2BF _H
5	1F0 _H to 1F3 _H	18	224 _H to 227 _H	31	258 _H to 25B _H	44	28C _H to 28F _H	57	2C0 _H to 2C3 _H
6	1F4 _H to 1F7 _H	19	228 _H to 22B _H	32	25C _H to 25F _H	45	290 _H to 293 _H	58	2C4 _H to 2C7 _H
7	1F8 _H to 1FB _H	20	22C _H to 22F _H	33	260 _H to 263 _H	46	294 _H to 297 _H	59	2C8 _H to 2CB _H
8	1FC _H to 1FF _H	21	230 _H to 233 _H	34	264 _H to 267 _H	47	298 _H to 29B _H	60	2CC _H to 2CF _H
9	200 _H to 203 _H	22	234 _H to 237 _H	35	268 _H to 26B _H	48	29C _H to 29F _H	61	2D0 _H to 2D3 _H
10	204 _H to 207 _H	23	238 _H to 23B _H	36	26C _H to 26F _H	49	2A0 _H to 2A3 _H	62	2D4 _H to 2D7 _H
11	208 _H to 20B _H	24	23C _H to 23F _H	37	270 _H to 273 _H	50	2A4 _H to 2A7 _H	63	2D8 _H to 2DB _H
12	20C _H to 20F _H	25	240 _H to 243 _H	38	274 _H to 277 _H	51	2A8 _H to 2AB _H	64	2DC _H to 2DF _H
13	210 _H to 213 _H	26	244 _H to 247 _H	39	278 _H to 27B _H	52	2AC _H to 2AF _H	—	—

(4) Link special relay (SB)

Data link status is stored in the form of bit on/off information.

Buffer memory address 5E0_H to 5FF_H corresponds to SB0000 to SB01FF.

Refer to Section 8.3.1 for details of link special relay (SB0000 to SB01FF).

Following table shows the relationship between buffer memory address 5E0_H to 5FF_H and SB0000 to SB01FF.

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
5E0 _H	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
5E1 _H	1F	1E	1D	1C	1B	1A	19	18	17	16	15	14	13	12	11	10
5E2 _H	2F	2E	2D	2C	2B	2A	29	28	27	26	25	24	23	22	21	20
5E3 _H	3F	3E	3D	3C	3B	3A	39	38	37	36	35	34	33	32	31	30
5E4 _H	4F	4E	4D	4C	4B	4A	49	48	47	46	45	44	43	42	41	40
5E5 _H	5F	5E	5D	5C	5B	5A	59	58	57	56	55	54	53	52	51	50
5E6 _H	6F	6E	6D	6C	6B	6A	69	68	67	66	65	64	63	62	61	60
5E7 _H	7F	7E	7D	7C	7B	7A	79	78	77	76	75	74	73	72	71	70
5E8 _H	8F	8E	8D	8C	8B	8A	89	88	87	86	85	84	83	82	81	80
5E9 _H	9F	9E	9D	9C	9B	9A	99	98	97	96	95	94	93	92	91	90
5EA _H	AF	AE	AD	AC	AB	AA	A9	A8	A7	A6	A5	A4	A3	A2	A1	A0
5EB _H	BF	BE	BD	BC	BB	BA	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
5EC _H	CF	CE	CD	CC	CB	CA	C9	C8	C7	C6	C5	C4	C3	C2	C1	C0
5ED _H	DF	DE	DD	DC	DB	DA	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
5EE _H	EF	EE	ED	EC	EB	EA	E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
5EF _H	FF	FE	FD	FC	FB	FA	F9	F8	F7	F6	F5	F4	F3	F2	F1	F0
5F0 _H	10F	10E	10D	10C	10B	10A	109	108	107	106	105	104	103	102	101	100
5F1 _H	11F	11E	11D	11C	11B	11A	119	118	117	116	115	114	113	112	111	110
5F2 _H	12F	12E	12D	12C	12B	12A	129	128	127	126	125	124	123	122	121	120
5F3 _H	13F	13E	13D	13C	13B	13A	139	138	137	136	135	134	133	132	131	130
5F4 _H	14F	14E	14D	14C	14B	14A	149	148	147	146	145	144	143	142	141	140
5F5 _H	15F	15E	15D	15C	15B	15A	159	158	157	156	155	154	153	152	151	150
5F6 _H	16F	16E	16D	16C	16B	16A	169	168	167	166	165	164	163	162	161	160
5F7 _H	17F	17E	17D	17C	17B	17A	179	178	177	176	175	174	173	172	171	170
5F8 _H	18F	18E	18D	18C	18B	18A	189	188	187	186	185	184	183	182	181	180
5F9 _H	19F	19E	19D	19C	19B	19A	199	198	197	196	195	194	193	192	191	190
5FA _H	1AF	1AE	1AD	1AC	1AB	1AA	1A9	1A8	1A7	1A6	1A5	1A4	1A3	1A2	1A1	1A0
5FB _H	1BF	1BE	1BD	1BC	1BB	1BA	1B9	1B8	1B7	1B6	1B5	1B4	1B3	1B2	1B1	1B0
5FC _H	1CF	1CE	1CD	1CC	1CB	1CA	1C9	1C8	1C7	1C6	1C5	1C4	1C3	1C2	1C1	1C0
5FD _H	1DF	1DE	1DD	1DC	1DB	1DA	1D9	1D8	1D7	1D6	1D5	1D4	1D3	1D2	1D1	1D0
5FE _H	1EF	1EE	1ED	1EC	1EB	1EA	1E9	1E8	1E7	1E6	1E5	1E4	1E3	1E2	1E1	1E0
5FF _H	1FF	1FE	1FD	1FC	1FB	1FA	1F9	1F8	1F7	1F6	1F5	1F4	1F3	1F2	1F1	1F0

(5) Link special register (SW)

Data link status is stored in the form of word information.

Buffer memory address 600_H to 7FF_H corresponds to SW0000 to SW01FF.

Refer to Section 8.3.2 for details of link special register (SW0000 to 01FF).

MEMO

[illegible]

4. Functions

This chapter describes the functions.

4.1 Function List

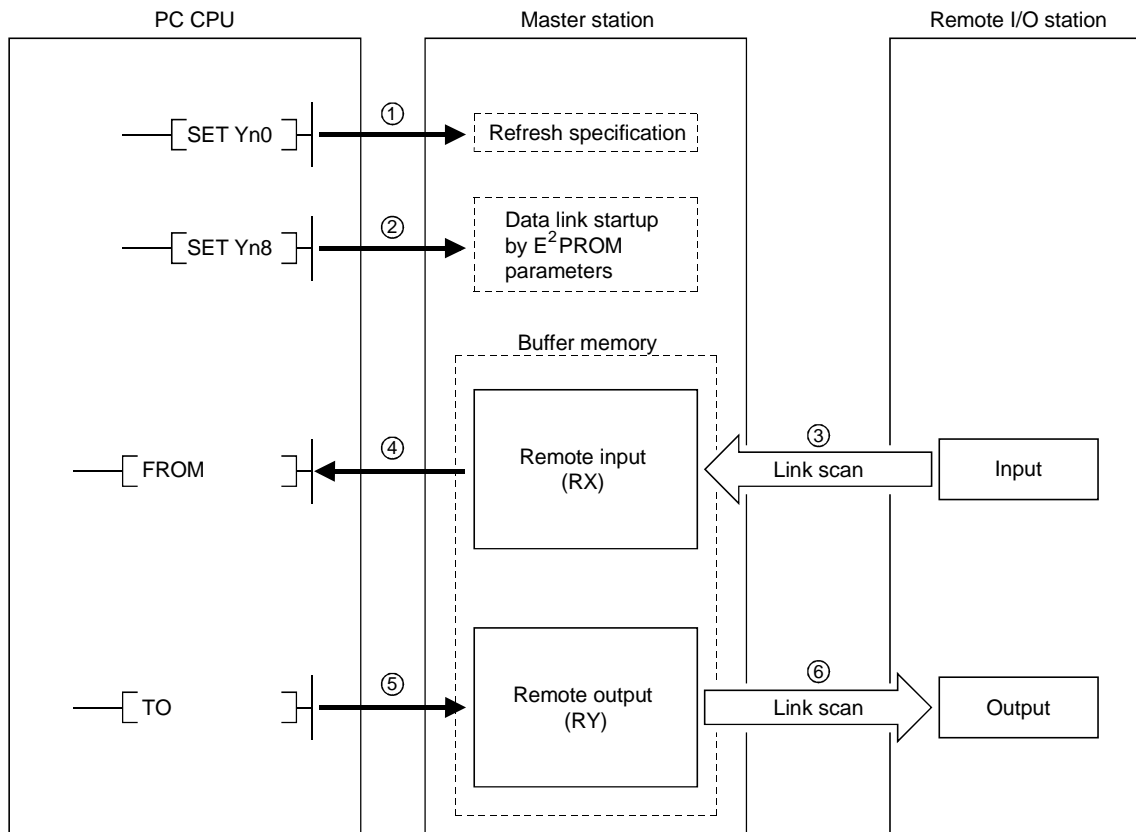
The function list is shown in Table 4.1.

Table 4.1 Function list

Item		Function summary	Reference	Function availability	
				Master station	Local station
Communication between master and remote I/O stations		Performs on/off data communication with remote I/O station.	Section 4.2	○	×
Communication between master and remote device stations		Performs on/off data and numeric data communication with remote device station.	Section 4.3	○	×
Communication between master and local stations		Performs on/off data and numeric data communication with local station.	Section 4.4	○	○
Communication with compound system		Performs communication with remote I/O, remote device and local stations.	Section 4.5	○	○
Reserved station function		By setting the remote and local stations planned to be connected in the future as reserved stations, these stations will not be treated as error. When specified to an already connected module, data link cannot be performed at all.	Section 4.6	○	×
Error invalid station function		Remote and local stations that can no longer perform data link due to power off, etc., will not be treated as data-link faulty stations.	Section 4.7	○	×
Data-link status setting when a master station PC CPU error occurs		Data-link status can be set when an operation-continue error occurs with the master station PC CPU.	Section 4.8	○	○
Parameter registration to E ² PROM		By registering the parameters in the master module's E ² PROM, the parameters do not have to be written every time the master module is started up.	Section 6.1	○	×
Input data from a data-link faulty station status setting		The status (clear/store) of the input (received) data from the data-link faulty station caused by power off, etc. can be set.	Section 4.9	○	○
Module reset function from a sequence program		When the switch setting is changed or an error occurred with the module, the module can be reset from the sequence program instead of resetting the PC CPU.	Section 4.10	○	○
Data link stop/restart		When executing the data link from Yn6 or Yn8, the data link can be stopped or restarted.	Section 4.11	○	○
RAS function	Automatic return function	When the module removed from the data link due to power off, etc. recovers to normal status, the module automatically joins the data link.	Section 4.12.1	○	○
	Child-station cutoff function	The module which no longer can continue the data link due to power off, etc. is removed from the data link, and the data link is continued with only the normal modules.	Section 4.12.2	○	×
	Data link status check (SB/SW)	The data link status can be checked. Can be used for sequence program interlocking, etc.	Section 8.4	○	○
	Offline test	The following tests can be conducted: <ul style="list-style-type: none"> • Hardware test..... Operation check for the individual module • Line test..... Module connection condition check • Parameter verification test Verify the set parameter contents 	Section 7.4 Section 7.7 Section 7.8	○	○

4.2 Communication Between the Master Station and Remote I/O Station

The overview of the communication between the master station and remote I/O station is described.

**[Data link startup]**

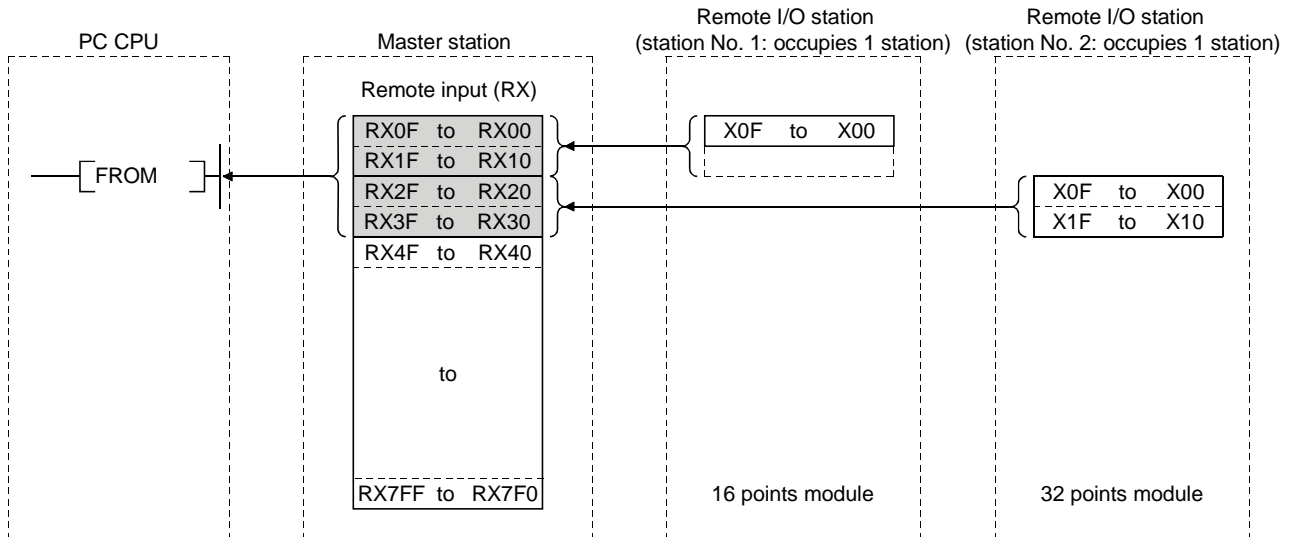
- ① Turn on the refresh specification (Yn0) and make the remote output (RY) data valid.
When the refresh specification (Yn0) is off, all the remote output (RY) data is treated as 0 (off).
- ② Turn on the data link startup by the E²PROM parameters (Yn8), and start the data link.
However, the parameters must be set in E²PROM beforehand.
When the data link is started normally, the host data link status (Xn1) turns on.

POINT

The data link can be started from the parameters written in the "parameter information area" in the buffer memory. (Refer to Chapter 6.)

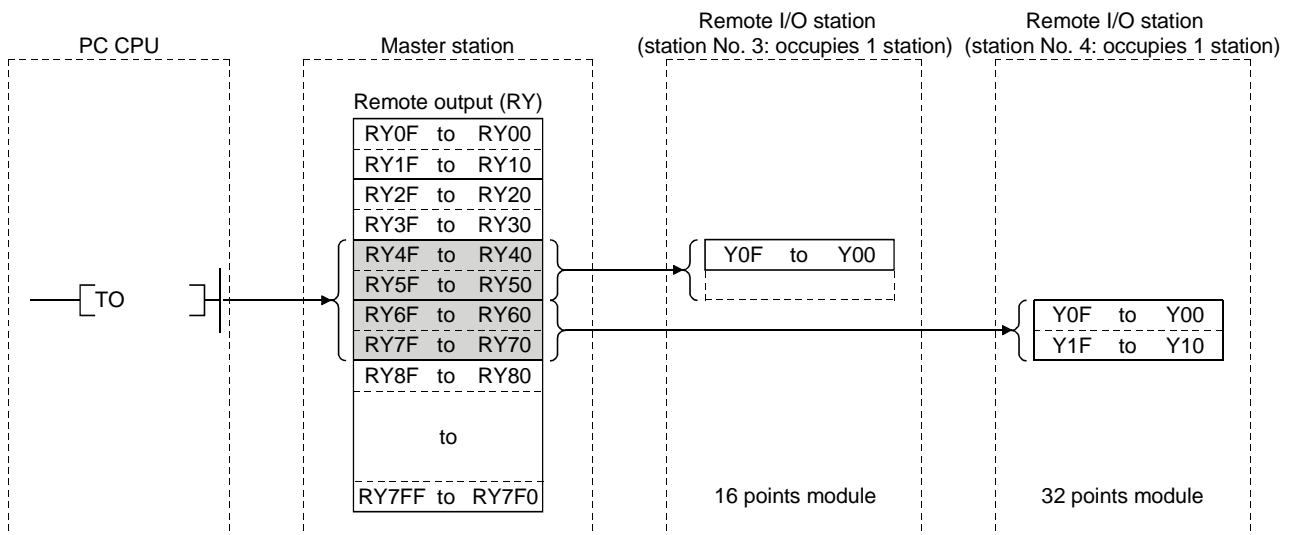
[Remote input]

- ③ The remote I/O station's input status is automatically (for each link scan) stored in the master station's "remote input (RX)" in the buffer memory.
- ④ The input status stored in the "remote input (RX)" in the buffer memory is received to the PC CPU with the FROM instruction.



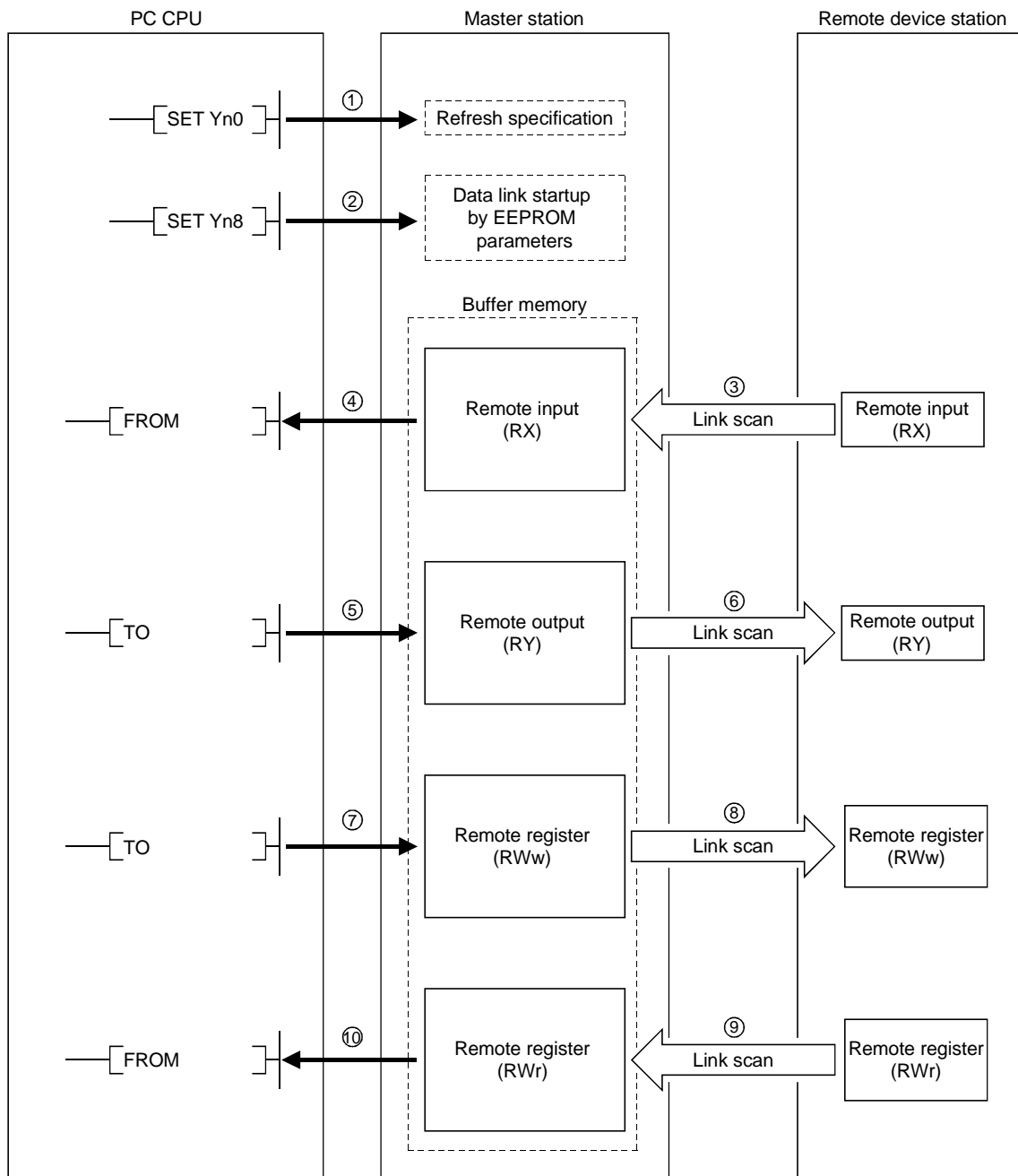
[Remote output]

- ⑤ With the TO instruction, the on/off data output from the remote I/O station is written to the "remote output (RY)" in the buffer memory.
- ⑥ The output status stored in the "remote output (RY)" in the buffer memory is automatically output (for each link scan) from the remote I/O station.



4.3 Communication Between the Master Station and Remote Device Station

The overview of the communication between the master station and remote device station is described.



[Data link startup]

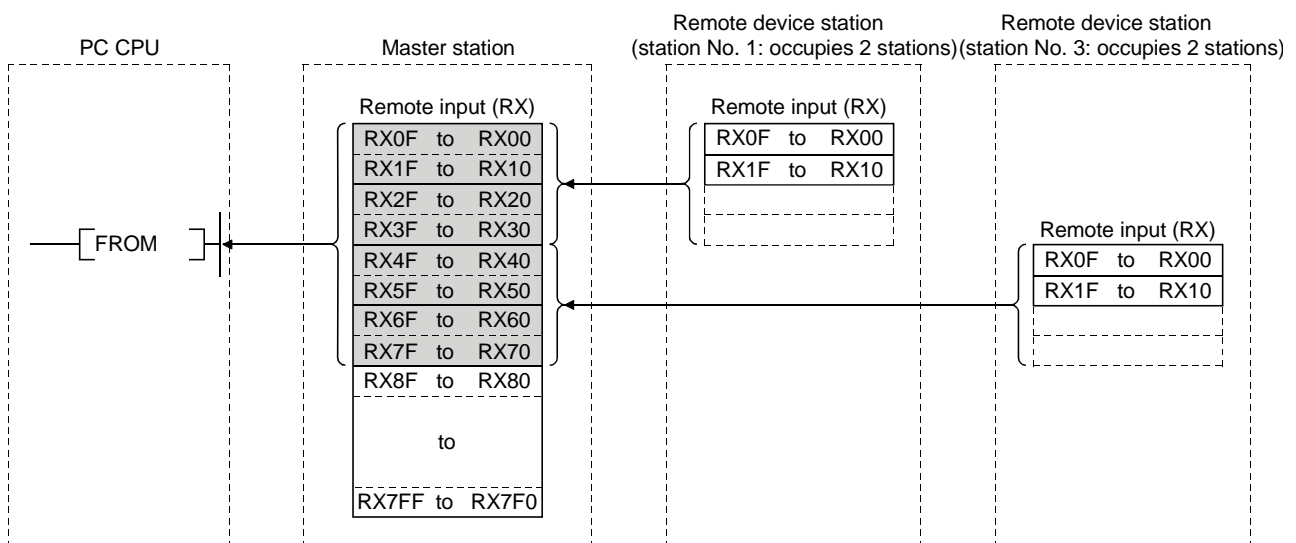
- ① Turn on the refresh specification (Yn0) and make the remote output (RY) data valid.
When the refresh specification (Yn0) is off, all the remote output (RY) data is treated as 0 (off).
- ② Turn on the data link startup by the E²PROM parameters (Yn8), and start the data link.
However, the parameters must be set in E²PROM beforehand.
When the data link is started normally, the host data link status (Xn1) turns on.

POINT

The data link can be started from the parameters written in the "parameter information area" in the buffer memory. (Refer to Chapter 6.)

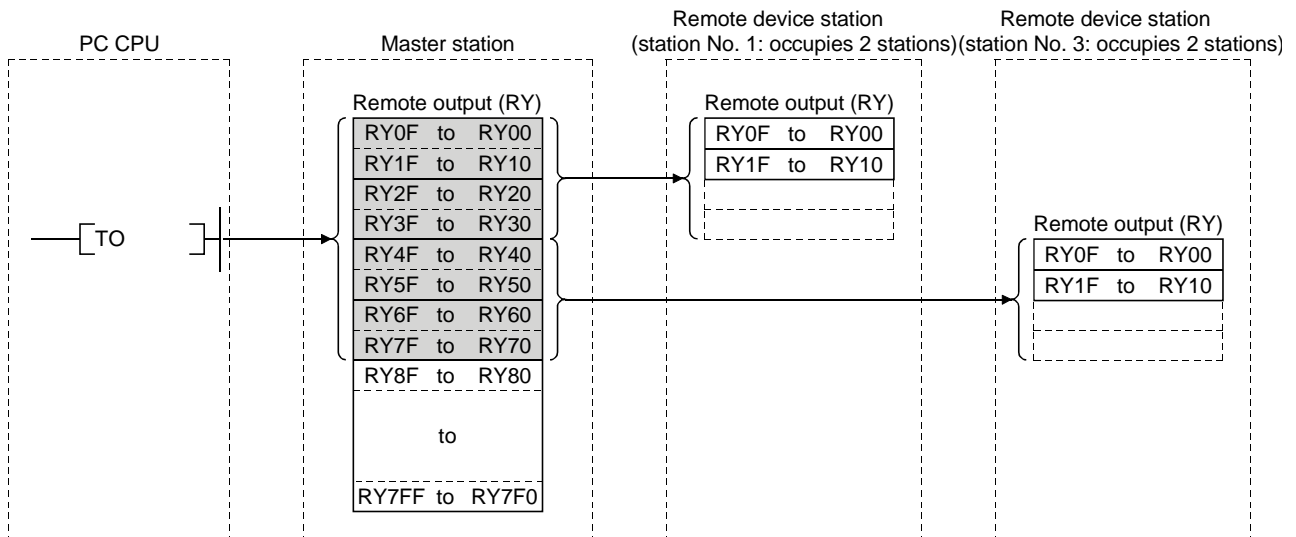
[Remote input]

- ③ The remote device station's remote input (RX) is automatically (for each link scan) stored in the master station's "remote input (RX)" in the buffer memory.
- ④ The input status stored in the "remote input (RX)" in the buffer memory is received to the PC CPU with the FROM instruction.



[Remote output]

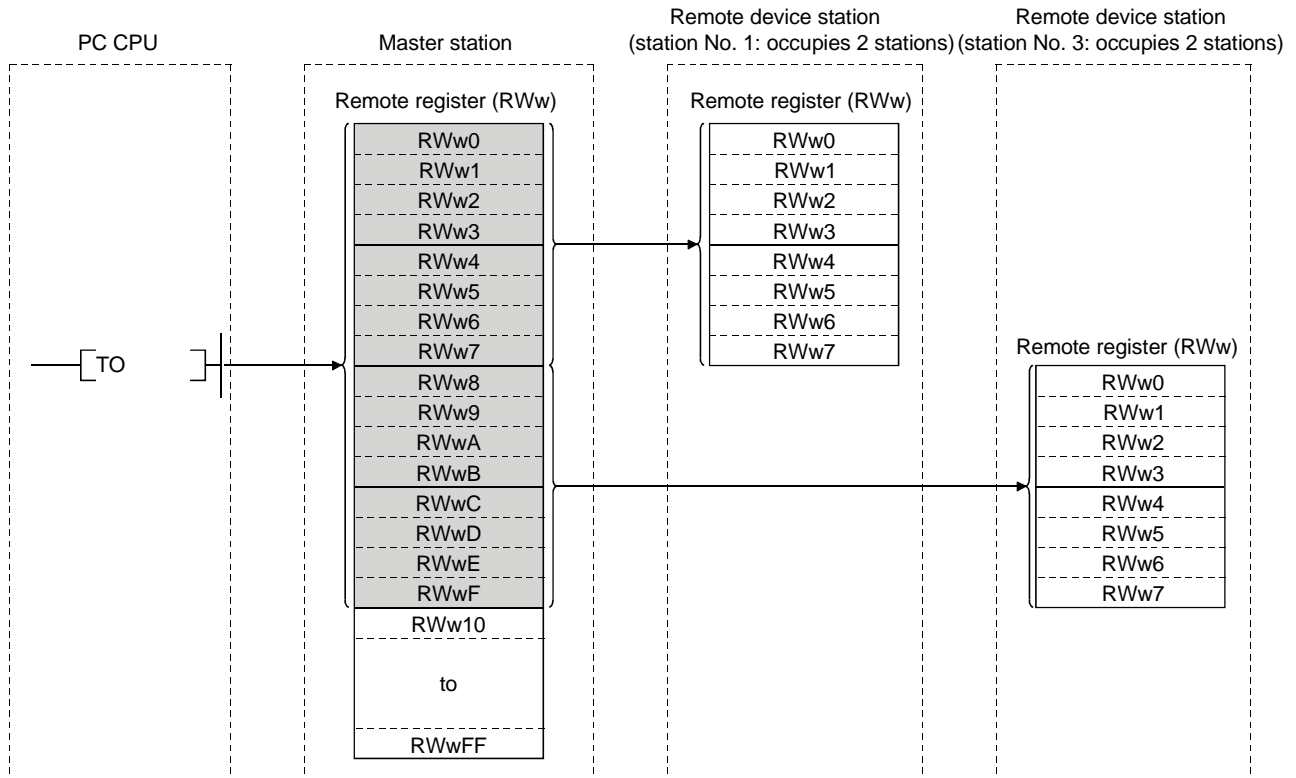
- ⑤ With the TO instruction, the on/off data in the remote device station's remote output (RY) is written to the "remote output (RY)" in the buffer memory.
- ⑥ Depending on the output status stored in the "remote output (RY)" in the buffer memory, the remote device station's remote output (RY) is turned on/off.



[Written to the remote register (RWw)]

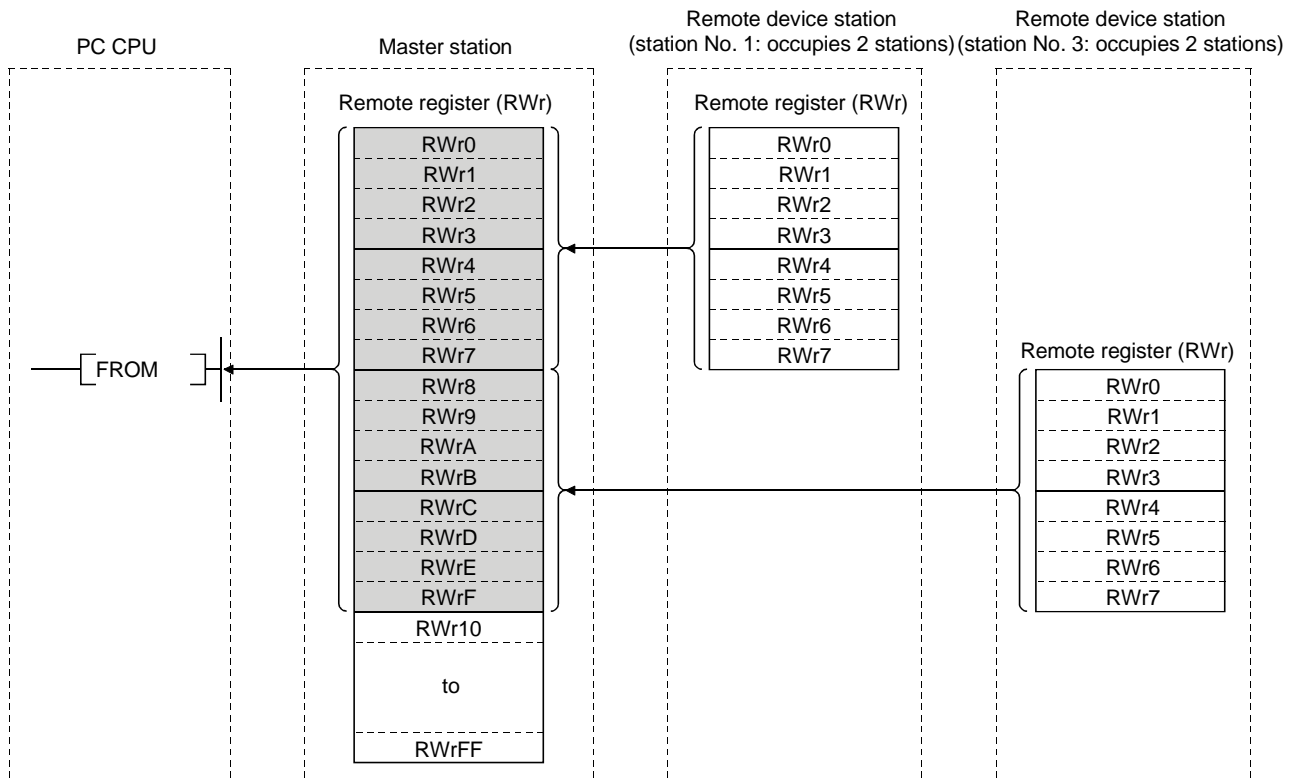
⑦ With the TO instruction, the transmission data is written to the "remote register (RWw)" in the buffer memory.

⑧ The data stored in the "remote register (RWw)" in the buffer memory is sent to the remote device station's remote register (RWw).



[Reading from the remote register (RWr)]

- ⑨ The data in the remote device station's remote register (RWr) is automatically stored in the master station's "remote register (RWr)" in the buffer memory
- ⑩ The remote device station's remote register (RWr) data stored in the "remote register (RWr)" in the buffer memory is received to the PC CPU with the FROM instruction.

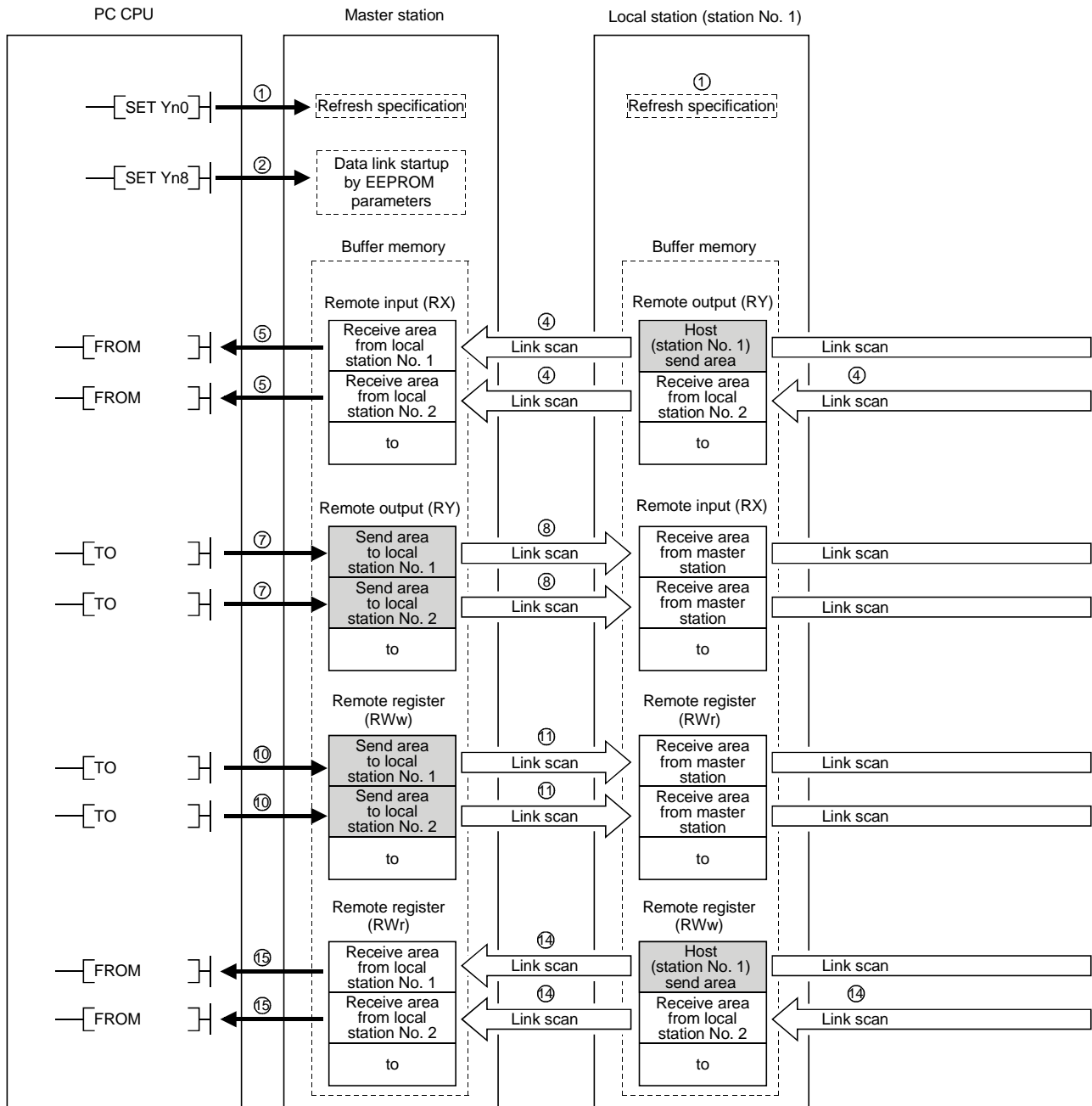


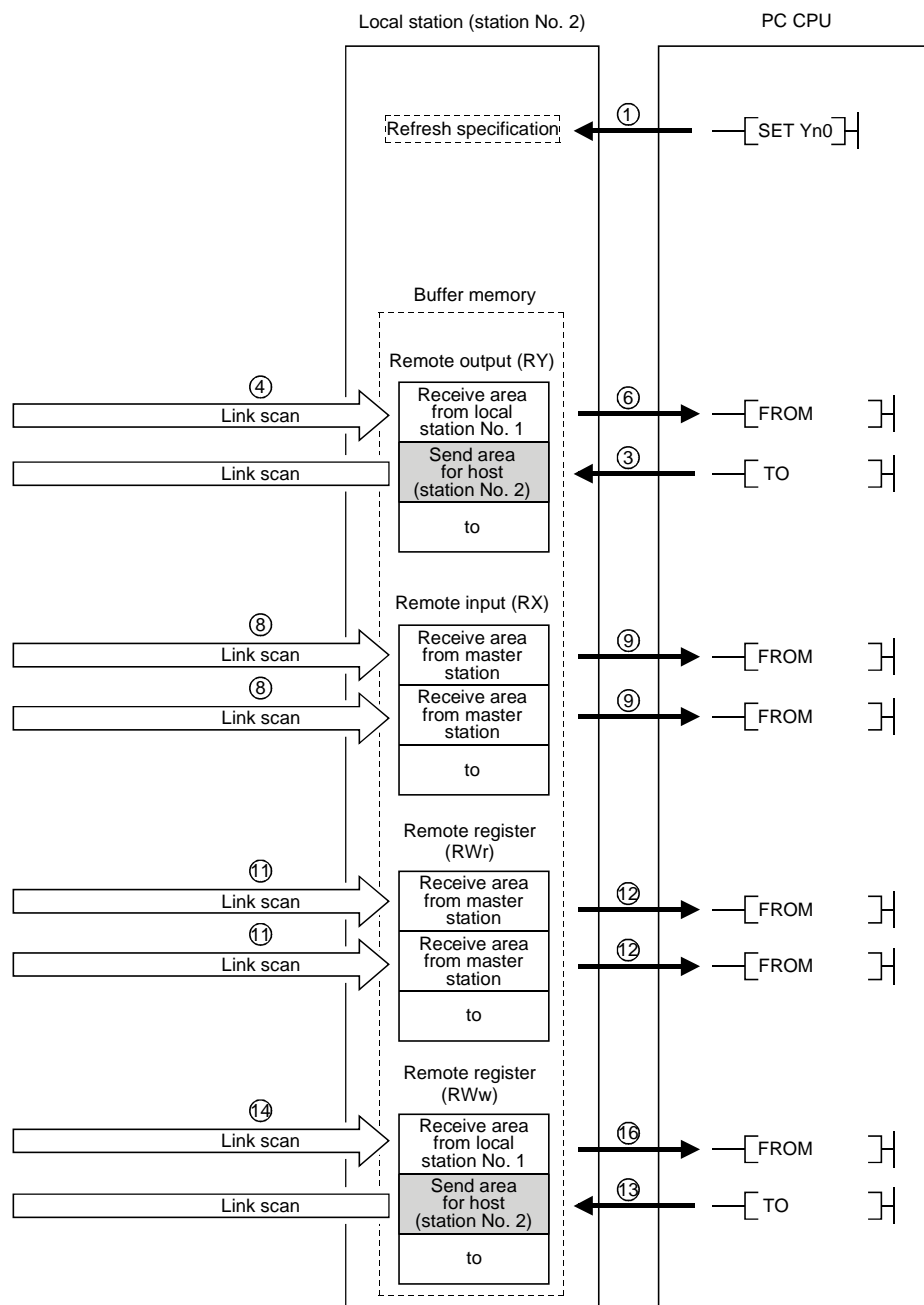
MEMO

[illegible]

4.4 Communication Between the Master Station and Local Station

The overview of the communication between the master and local stations is described.





[Data link startup]

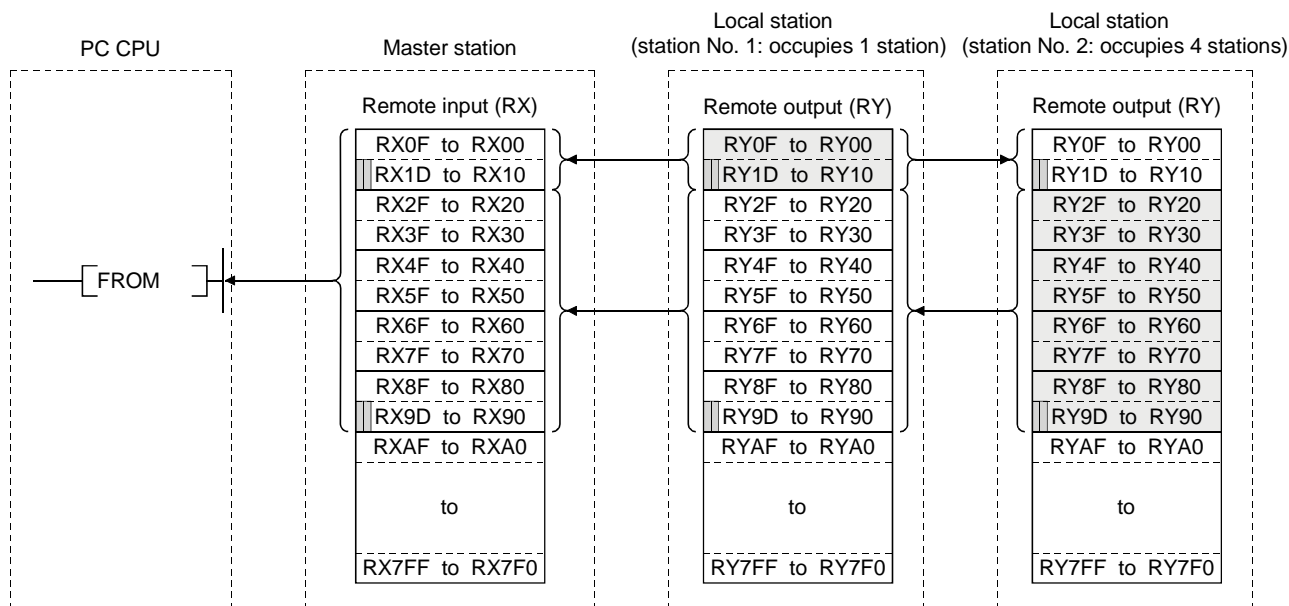
- ① Turn on the refresh specification (Yn0) and make the remote output (RY) data valid.
When the refresh specification (Yn0) is off, all the remote output (RY) data is treated as 0 (off).
- ② Turn on the data link startup by the E²PROM parameters (Yn8) and start the data link.
However, the parameters must be set in the E²PROM beforehand.
When the data link is started normally, the host data link status (Xn1) turns on.

POINT

The data link can also be started from the parameters written in the "parameter data area" in the buffer memory. (Refer to chapter 6.)

[On/off data from local station → master and other local stations]

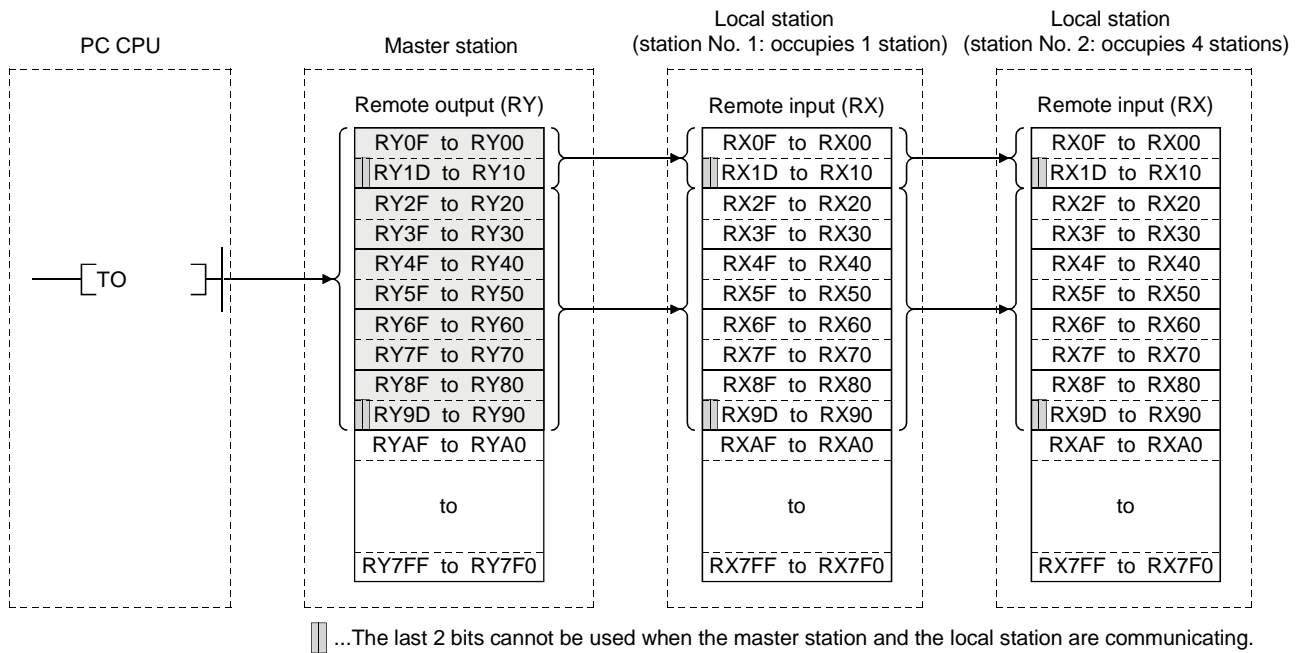
- ③ With the TO instruction, write the on/off data to be sent to the master and other local stations to the local station's "remote output (RY)" in the buffer memory.
- ④ The data in local station's "remote output (RY)" in the buffer memory is automatically (for each link scan) stored in the master station's "remote input (RX)" in the buffer memory and other local station's "remote output (RY)" in the buffer memory.
- ⑤ The input status stored in the "remote input (RX)" in the buffer memory is received to the PC CPU with the FROM instruction.
- ⑥ The input status stored in the "remote output (RY)" in the buffer memory is received to the PC CPU with the FROM instruction.



...The last 2 bits cannot be used when the master station and the local station are communicating.

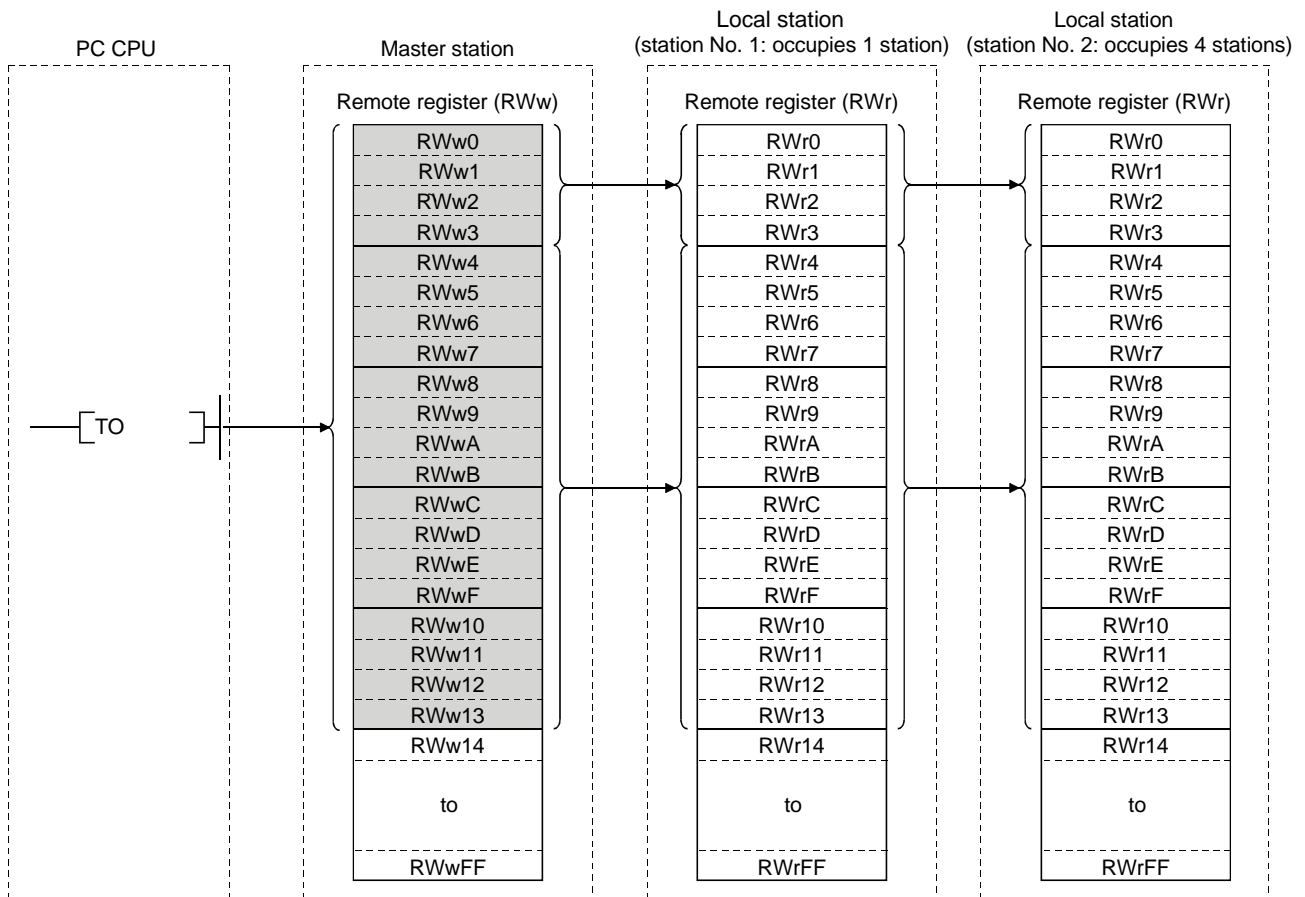
[On/off data from the master station → the local station]

- ⑦ With the TO instruction, the on/off data to be sent to the local station is written to the master station's "remote output (RY)" in the buffer memory.
- ⑧ The data in the "remote output (RY)" in the buffer memory is automatically (for each link scan) stored in the local station's remote input (RX) in the buffer memory.
- ⑨ The input status stored in the "remote input (RX)" in the buffer memory is received to the PC CPU with the FROM instruction.



[Word data from the master station to all local stations]

- ⑩ With the TO instruction, the word data to be sent to all local station is written to the master station's "remote register (RWw)" in the buffer memory.
- ⑪ The data in the "remote register (RWw)" in the buffer memory is automatically (for each link scan) stored to all local station's "remote registers (RWr)".
- ⑫ The word data stored in the "remote register (RWr)" in the buffer memory is received to the PC CPU with the FROM instruction.

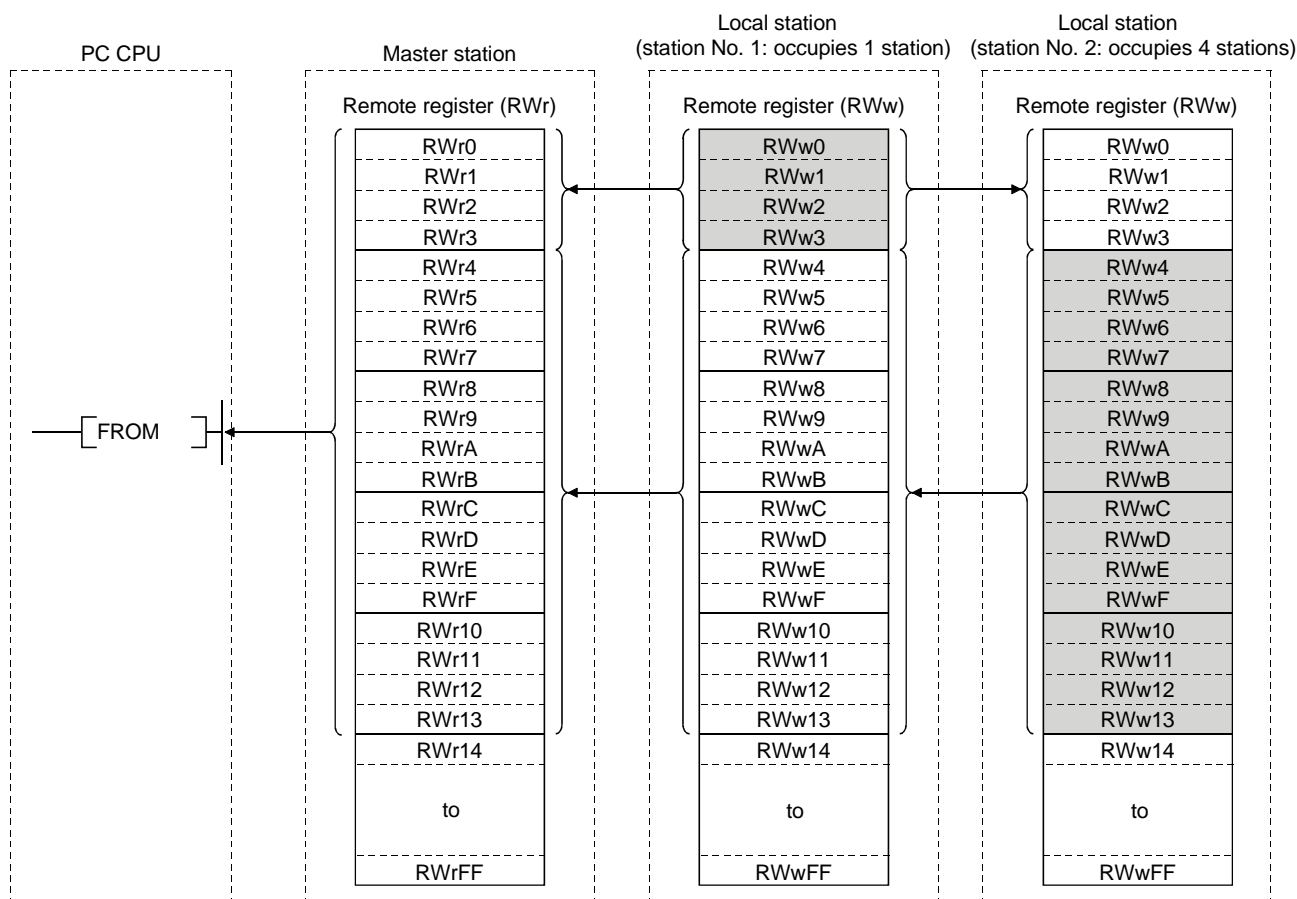


[Word data from the local station → the master station/other local stations]

- ⑬ With the TO instruction, the word data to be sent to the master station or other local stations is written to the local station's "remote register (RWw)" in the buffer memory.

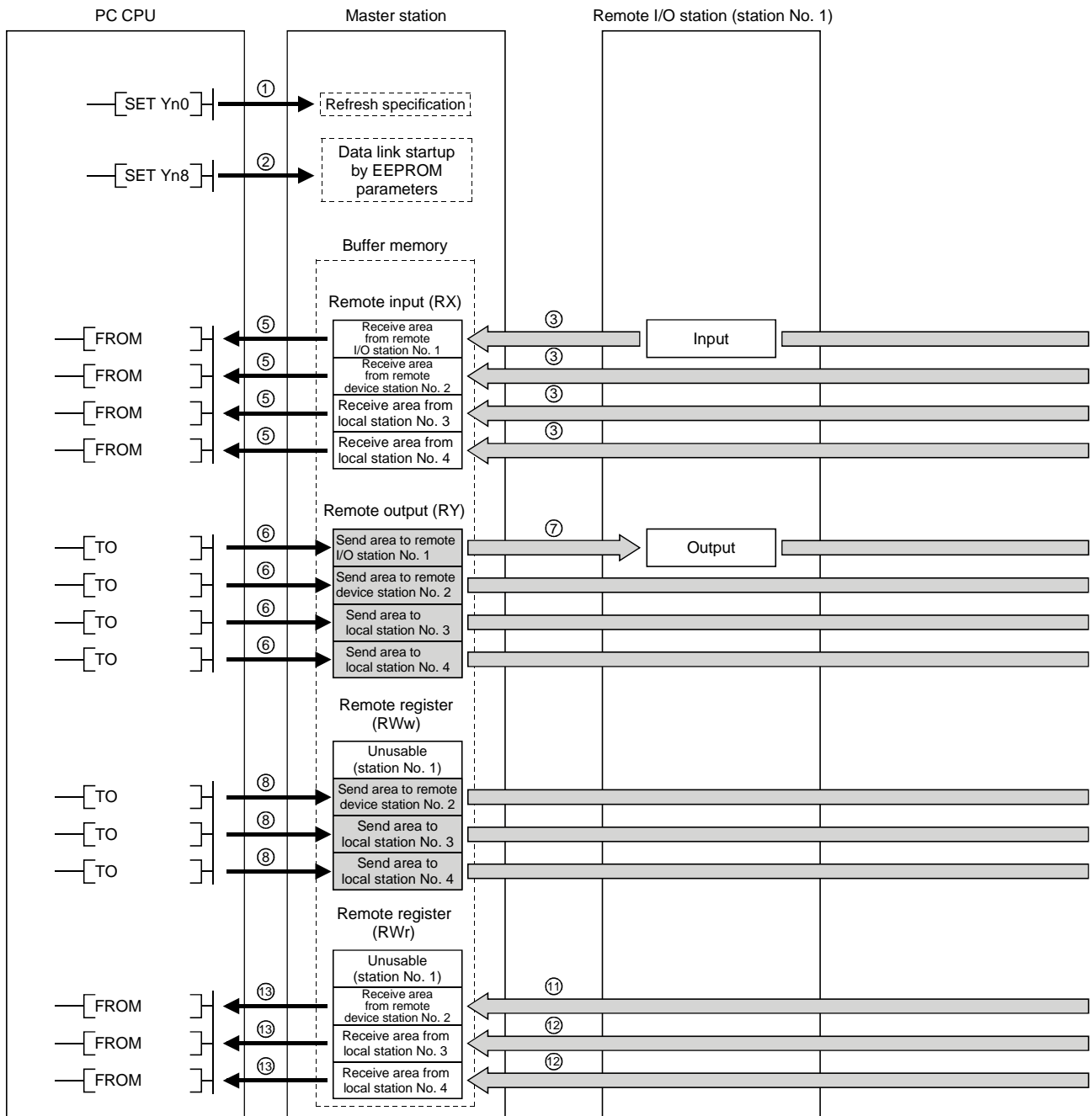
However, only writing can be performed to the area corresponding to the host station number.

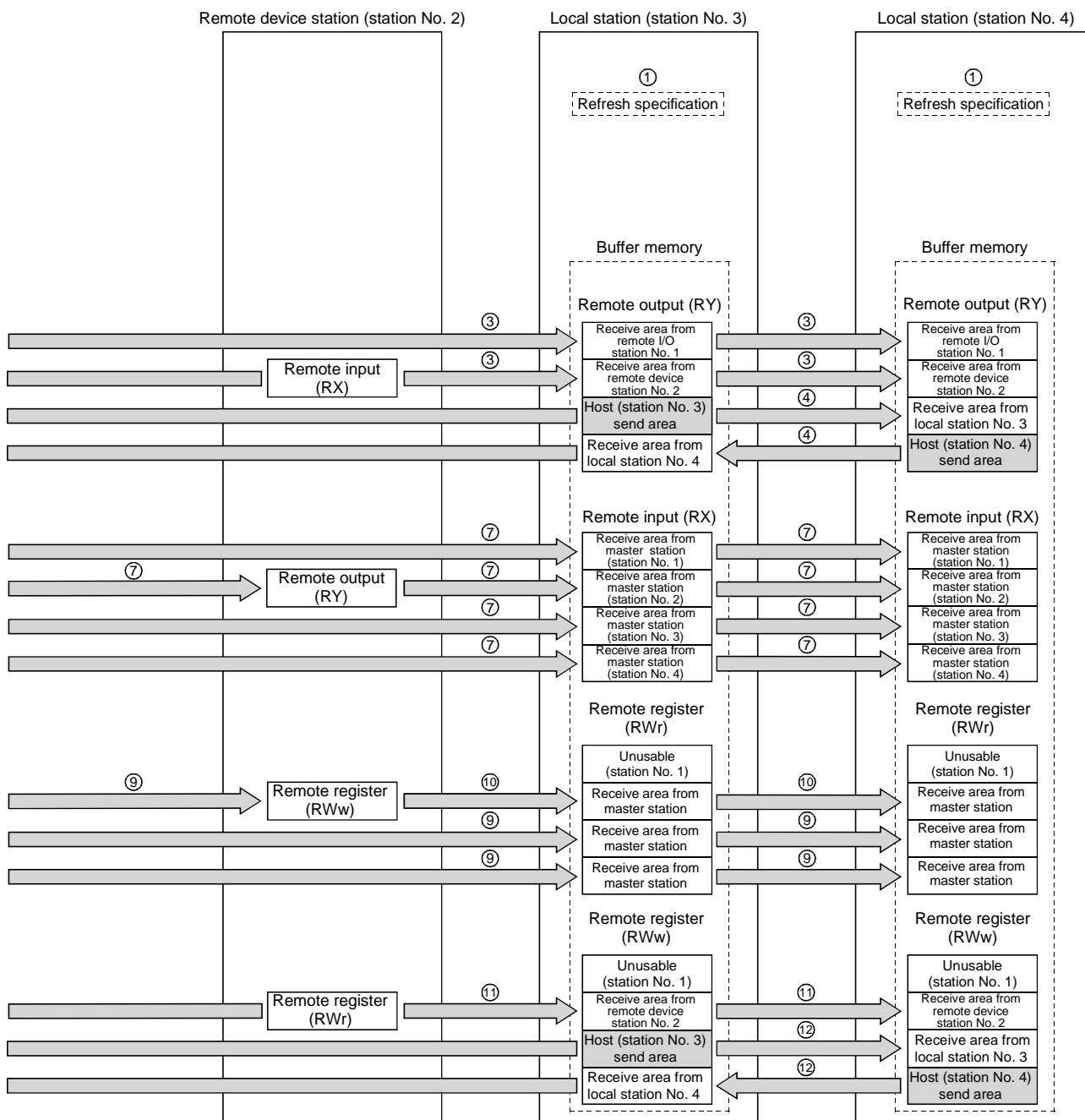
- ⑭ The data in the "remote register (RWw)" in the buffer memory is automatically (for each link scan) stored in the master station's "remote register (RWr)" and other local station's "remote register (RWw)".
- ⑮ The word data stored in the "remote register (RWr)" in the buffer memory is received to the PC CPU with the FROM instruction.
- ⑯ The word data stored in the "remote register (RWw)" in the buffer memory is received to the PC CPU with the FROM instruction.



4.5 Communication in Compound Systems

The overview of the communication where the remote I/O station, remote device station and local station coexist in the system.





[Data link startup]

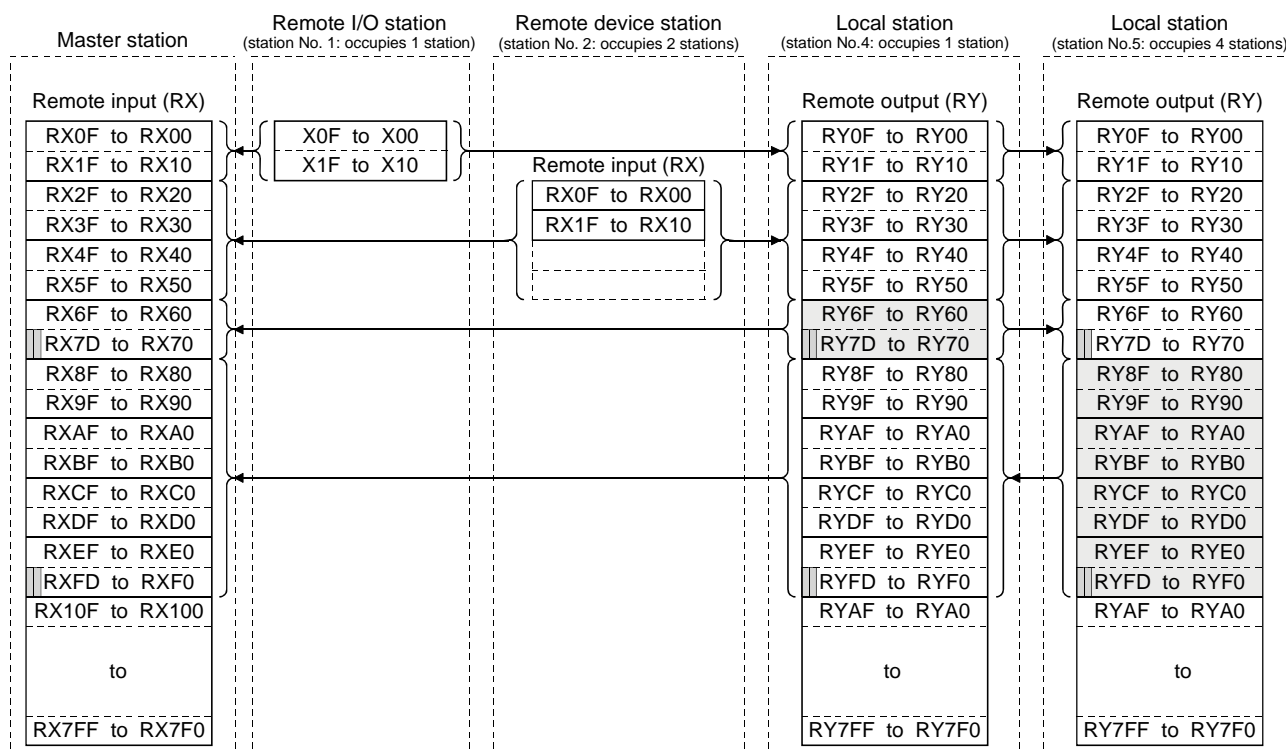
- ① Turn on the refresh specification (Yn0) and make the remote output (RY) data valid.
When the refresh specification (Yn0) is off, all the remote output (RY) data is treated as 0 (off).
- ② Turn on the data link startup by the E²PROM parameters (Yn8) and start the data link.
However, the parameters must be set in the E²PROM beforehand.
When the data link is started normally, the host data link status (Xn1) turns on.

POINT

The data link can also be started from the parameters written in the "parameter data area" in the buffer memory. (Refer to chapter 6.)

[On/off data from remote I/O station/remote device station/local station → the master station]

- ③ The input of remote I/O station, remote input (RX) of the remote device station and the remote output (RY) of the local station are automatically (for each link scan) stored in the master station's "remote input (RX)" in the buffer memory and local station's "remote output (RY)" in the buffer memory.
- ④ The data in local station's "remote output (RY)" is also stored in other local station's "remote output (RY)".
- ⑤ The input status stored in the "remote input (RY)" in the buffer memory is written to the PC CPU with the FROM instruction.

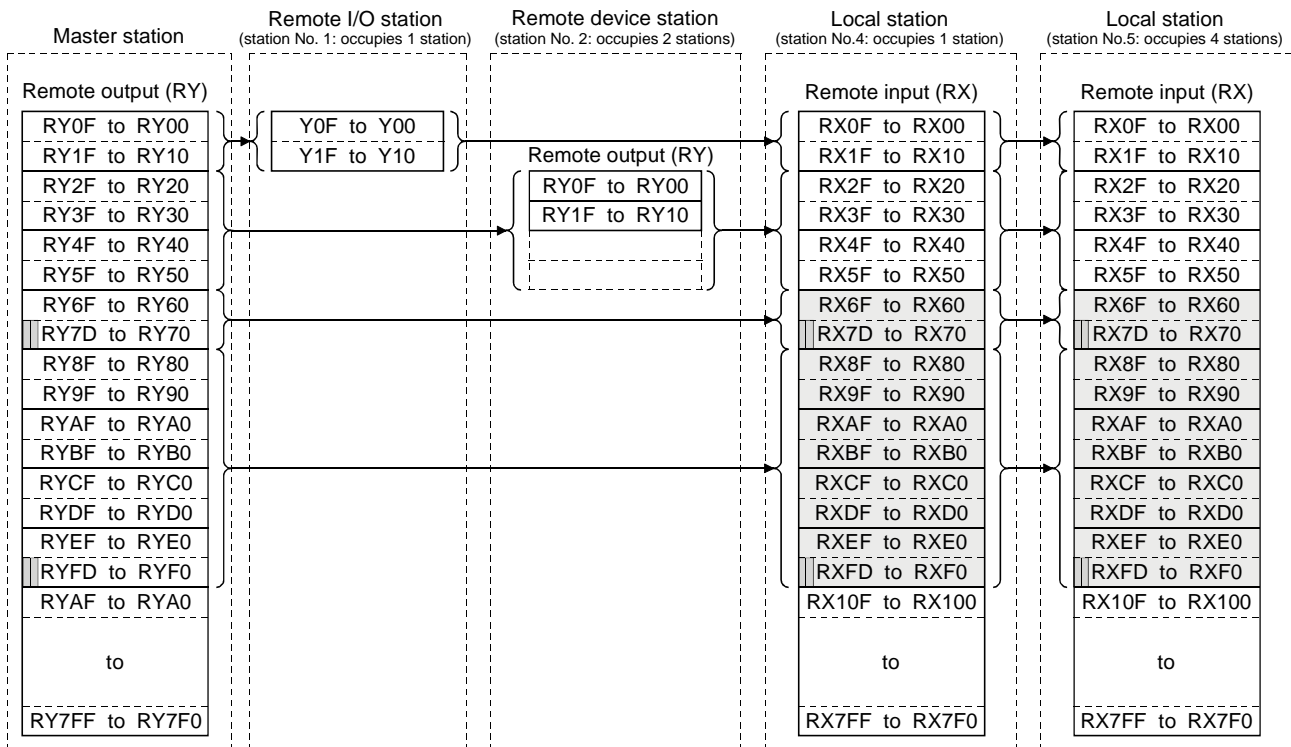


...The last 2 bits cannot be used when the master station and the local station are communicating.

[On/off data from the master station → the remote I/O station/remote device station/local station]

⑥ With the TO instruction, the on/off data to be sent to the remote I/O station, remote device station and local station is written to the master station's "remote output (RY)" in the buffer memory.

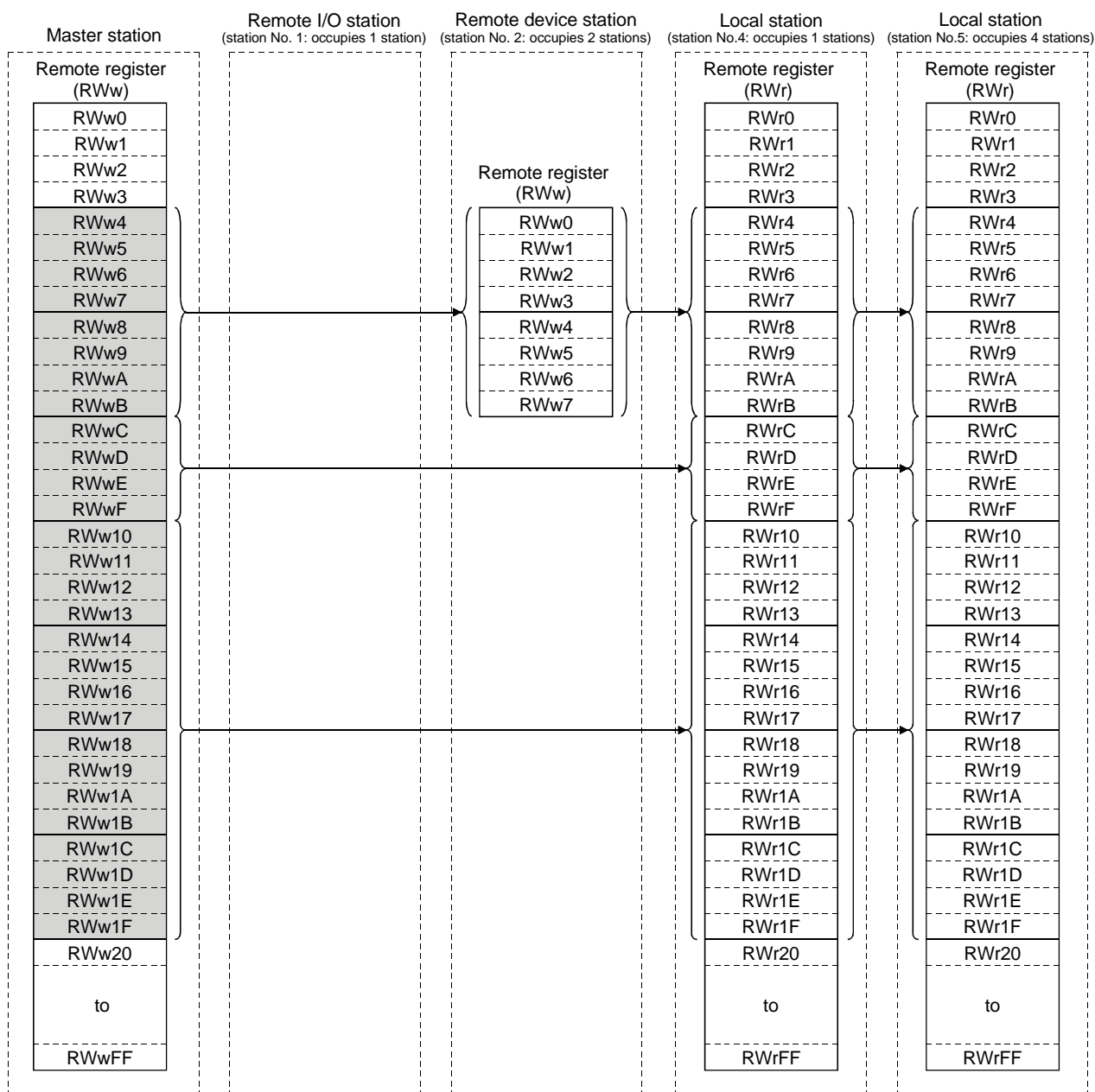
⑦ The output status in the master station's "remote output (RY)" in the buffer memory is automatically (for each link scan) stored in the remote I/O station and remote device station's "remote output (RX)" and local station's remote input (RY).



...The last 2 bits cannot be used when the master station and the local station are communicating.

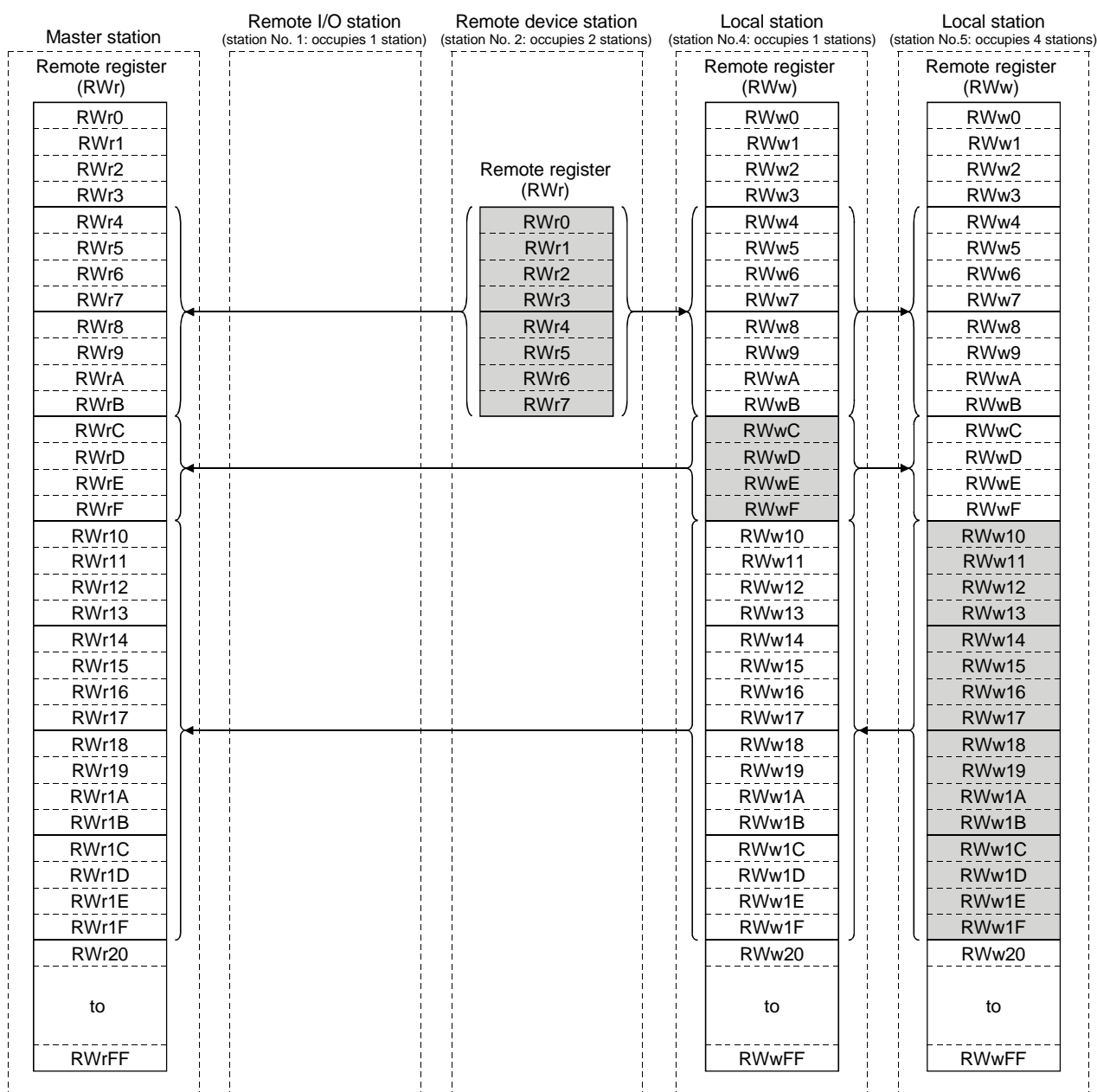
[Word data from the master station → remote device station/all local stations]

- ⑧ With the TO instruction, the word data to be sent to remote device station and all local station is written to the master station's "remote register (RWw)" in the buffer memory.
- ⑨ The data in the "remote register (RWw)" in the buffer memory is automatically (for each link scan) stored to remote device station's remote register (RWw) and all local stations' remote registers (RWr).
- ⑩ The transmission data to the remote device station's remote register (RWw) is also sent to the local stations.



[Word data from the remote device station/local station → the master station]

- ⑪ The data in the remote device station's remote register (RWr) is automatically (for each link scan) stored in the master station's remote register (RWr) and all local stations' remote registers (RWw).
- ⑫ The data in the local station's "remote register (RWw)" in the buffer memory is automatically (for each link scan) stored in the master station's remote register (RWr) and other local station's remote register (RWr).
- ⑬ The data of the remote device and local stations stored in the "remote register (RWr)" in the buffer memory is written to the PC CPU with the FROM instruction.



4.6 Reserved Station Function

This is a function to treat the remote and local stations that are not actually connected (but planned for connection in the future) not as "data-link faulty stations".

POINT

If already connected remote and local stations are set as reserved station, the specified remote and local stations cannot perform data link at all.

(1) Setting method

The reserved station specification is performed with parameters (buffer memory address 10H to 13H).

Turn on the bit corresponding to the station number of the station to be reserved. However, for remote/local stations that occupy more than 2 stations, turn on the only bit corresponding to the station number set in the module's station number setting switch.

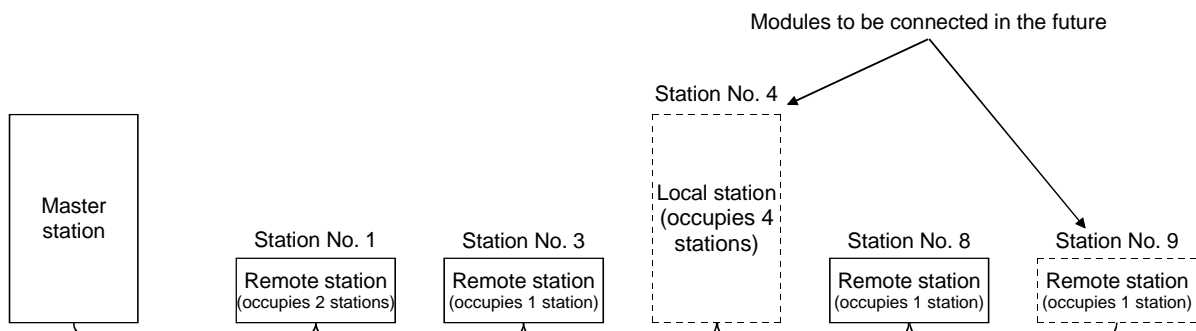
The buffer memory configuration is shown below. (1 to 64 indicates station numbers.)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
10H	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
11H	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
12H	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
13H	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49

(2) Setting example

(a) System configuration example

When one local station and one remote station are to be connected in the future to the system with three remote stations:



(b) Buffer memory setting example

Turn on the 3rd bit, corresponding to station No. 4, and 8th bit, corresponding to station No. 9. (Set "264" for address 10H.)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
10H	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
11H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4.7 Error Invalid Station Function

This is a function to treat the remote and local stations that cannot perform data links due to power off, etc. not as "data-link faulty stations" on the master station and the local station.

Be careful, however, for errors will not be detected at all if set so.

POINT

If the remote or local station set as the invalid station and also "specified as a reserved station", the reserved station function has priority.

(1) Setting method

The invalid station specification is performed with parameters (buffer memory address 14H to 17H).

Turn on the bit corresponding to the station number to be set as invalid.

However, for the remote/local station which occupies more than 2 stations, turn on the only bit corresponding to the station number set with the module's station number setting switch.

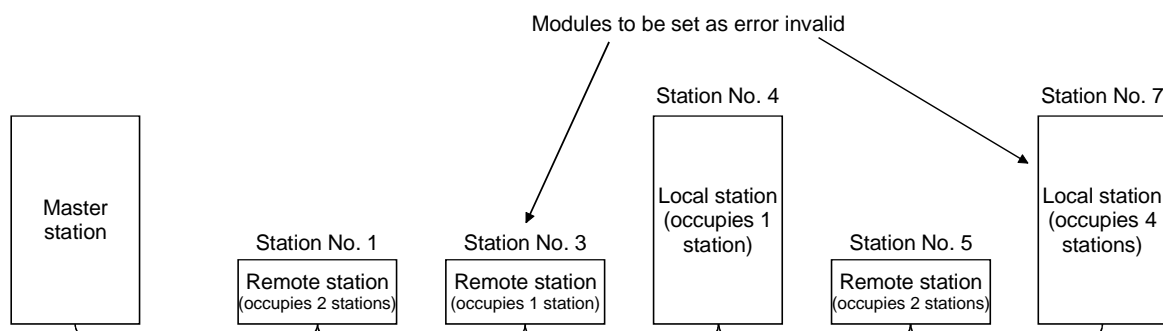
The buffer memory configuration is shown below. (1 to 64 indicates station numbers.)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
14H	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
15H	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
16H	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
17H	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49

(2) Setting example

(a) System configuration example

When specifying the remote station No.3 and local station No.7 as invalid stations in a system where three remote and two local stations are connected:



(b) Buffer memory setting example

Turn on the 2nd bit, corresponding to station No. 3, and 6th bit, corresponding to station No. 7. (Set "68" for address 14H.)

Address	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
14H	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
15H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4.8 Data Link Status Setting when the Master Station PC CPU has an Error

The data link status for when the master station's PC CPU has an "operation-stop error" can be set.

The data link between local stations can be continued.

POINT

Even if the master station PC CPU has an "operation-continue error", the data link continues.

[Setting method]

Set to the "operation specification when the CPU is down (address 6H)" in the parameter information area of the master station's buffer memory

0.....Stop (default)

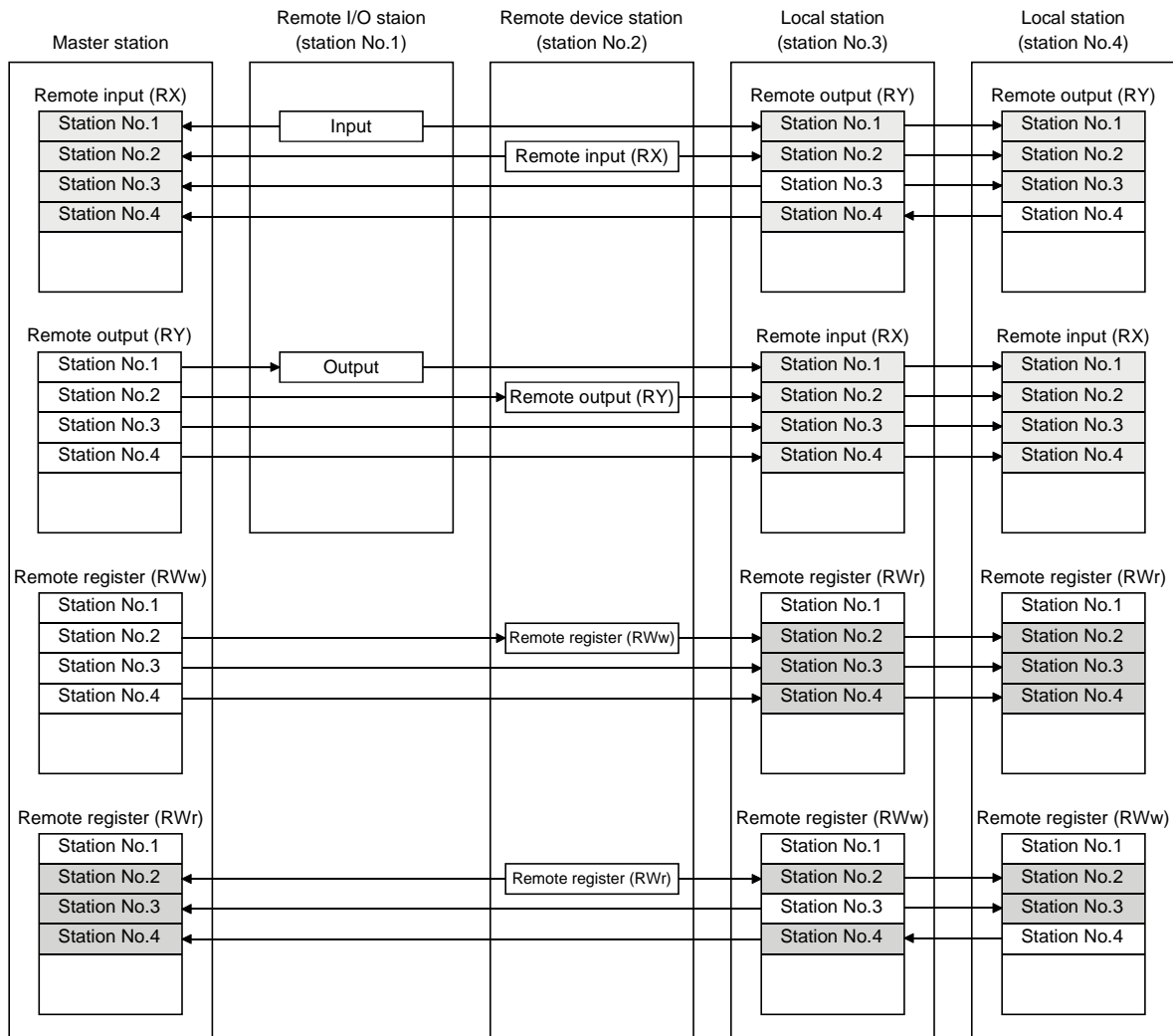
1.....Continue

4.9 Setting the Status of Input Data from a Data Link Faulty Station

The input (received) data status from a data-link faulty station can be set.

(1) Target input (received) data

The target buffer-memory area is shown below:



(2) Setting method

This is set with the master/local module's "condition setting switch (DIP switch) SW4".

OFFClear (setting at shipment)

ONKeep the status right before error

POINT

When the data-link faulty station is set as an error-invalid station, the input data from that station (remote input RX, remote output RY) are kept, regardless of the SW4 setting.

4.10 Module Reset Function from a Sequence Program

When the switch setting is changed or an error occurs with the module, the module can be reset from the sequence program instead of resetting the PC CPU.

However, reset cannot be performed when there is module error (Xn0 is on).

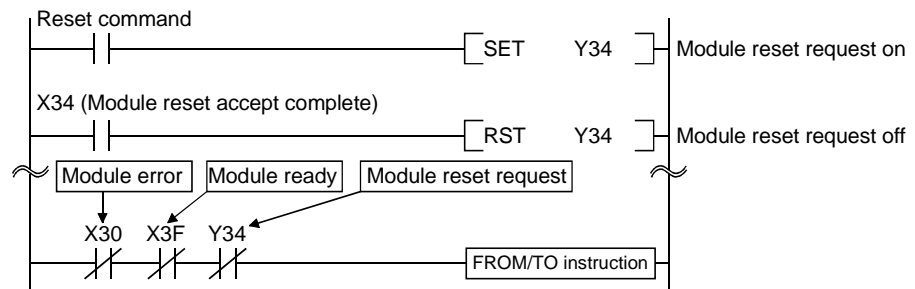
While the module reset request is being executed, do not execute the FROM/TO instruction for the module. When executing the FROM/TO instruction, provide interlocks using Xn0 (module error), XnF (module ready) and Yn4 (module reset request).

POINT

Because the PC CPU is not reset, other modules will not be affected at all.

A program example for resetting is shown below.

This example assumes that the module's first I/O No. is X/Y30.

**REMARK**

The following changes cannot be performed by the module reset request (Yn4). Turn the power off then on, or reset the PC CPU.

- 1) Station No. 0 (master station) → change to station No. 1 to 64 (local station)
- 2) Station No. 1 to 64 (local station) → change to station No. 0 (master station)
- 3) Mode 0 or 2 → change to test mode

4.11 Data Link Stop/Restart

The data link in the host station can be stopped or restarted.

When the data link is stopped for the master station, the data link for the entire system stops.

(1) The link special relay used in the program is shown below:

SB0000: Data link restart request

SB0002: Data link stop request

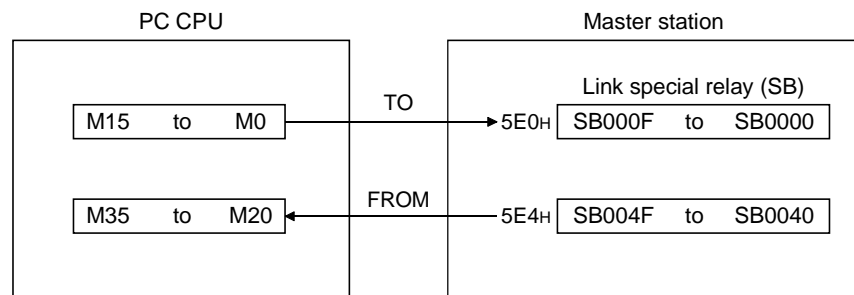
SB0041: Data link restart complete

SB0045: Data link stop complete

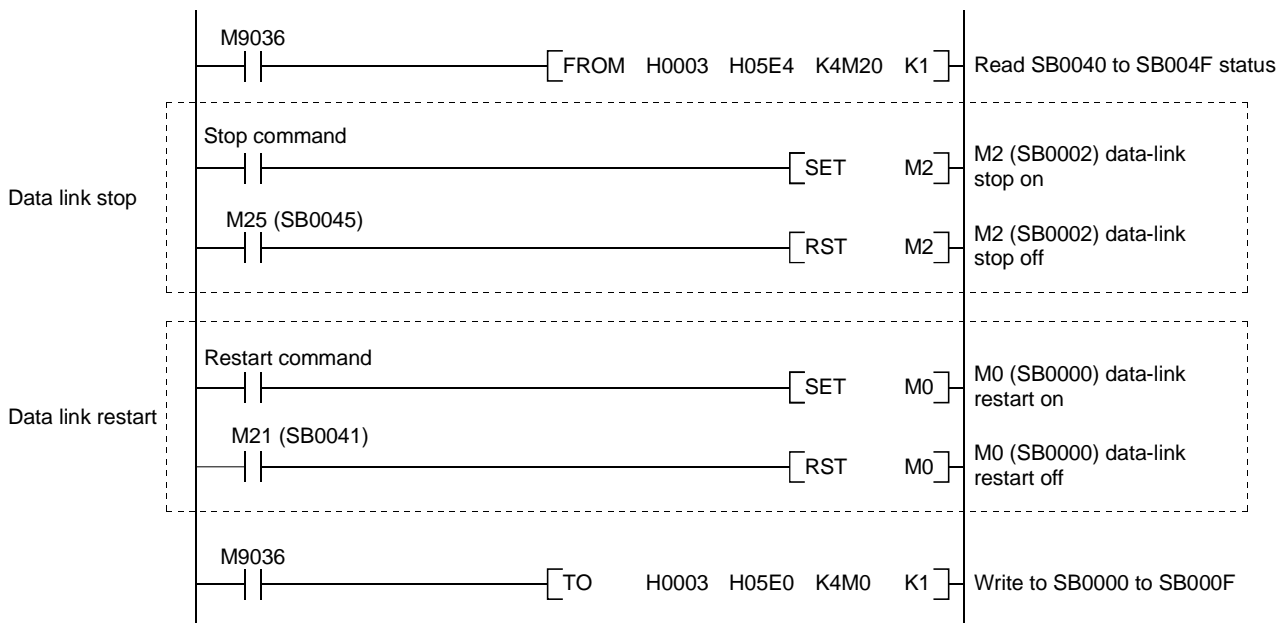
(2) A program example to stop/restart the data link is shown below.

This example assumes that the module's first I/O No. is X/Y30.

① Relationship between the PC CPU and master station



② Program example



4.12 RAS Function

RAS is an abbreviation for Reliability, Availability and Serviceability. This refers to the total ease of use in an automated facility.

4.12.1 Automatic return function

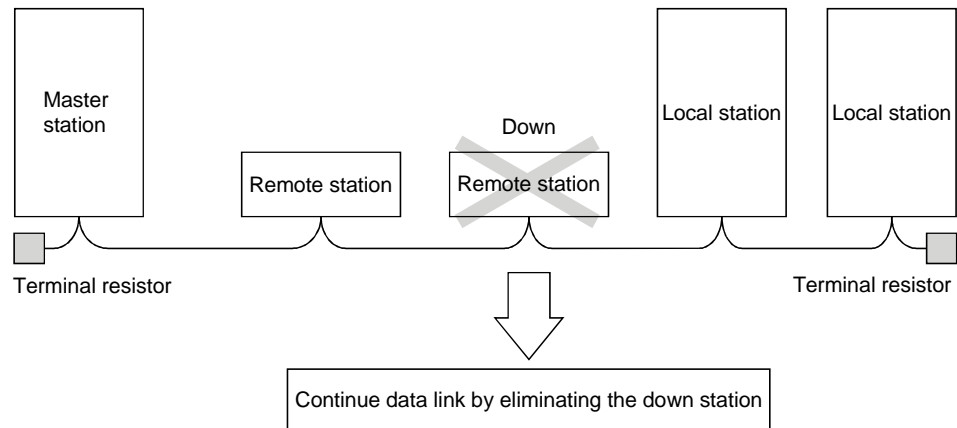
This function allows the remote and local station disconnected from the data link due to power off, etc. to be recovered to the data link automatically when the module returns to normal operation.

When using the automatic return function, set the mode setting switch to "0" or "1".

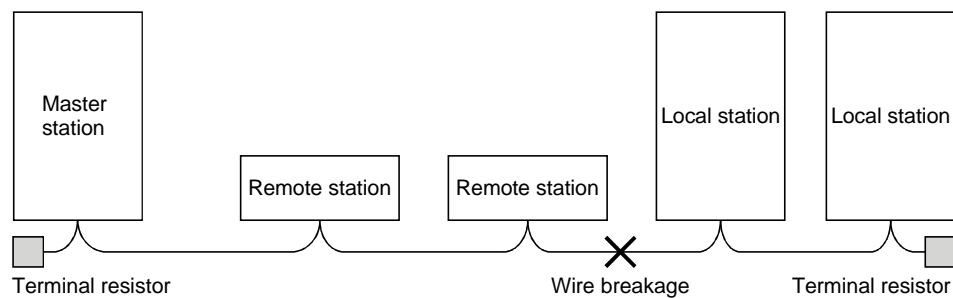
Mode setting switch	Setting details	Remark
0	Online (remote net mode)	—
1	Online (remote I/O net mode)	—
2	Offline	Data link not possible (disconnected)

4.12.2 Slave station cut-off function

This function allows data link to continue with the normal remote and local stations by cutting off the remote and local stations which cannot perform data links due to power off, etc.

**POINT**

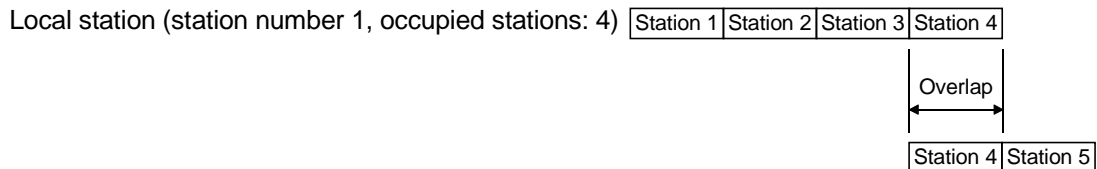
When the cable is disconnected, the data link cannot be performed because the terminal resistor is missing.



4.12.3 Station number overlap checking function

Checks whether the number of occupied stations overlap, by observing the status of the stations actually connected during data link startup (turn on Yn6 and Yn8).

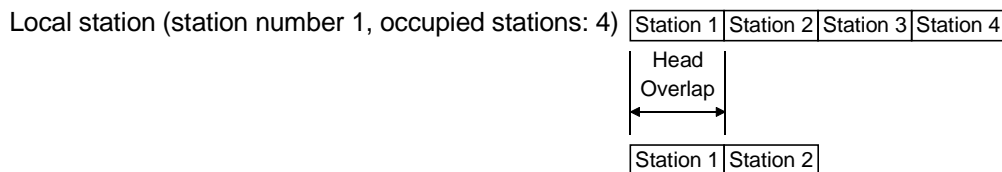
(Example)



Remote device station (station number 4, occupied stations: 2)

However, if the starting head number overlaps, this would not be a part of the overlap checking.

(Example)



Remote device station (station number 1, occupied stations: 2)

- (1) When there is an overlap, the "M/S" LED flashes, and the overlap status is stored in SW0098 to SW009B.
- (2) Even if overlap exists, data link can be continued with other normally functioning stations.
- (3) By correcting the switch setting to the normal status and starting up the data link (turn on Yn6 and Yn8) again, the "M/S" LED is turned off and the data in SW0098 to SW009B are cleared.

5. Data Link Processing Time

5.1 Status of Each Station when an Error has Occurred

The status of each station when an error has occurred is shown in the table below.

Data link status				Master station				Remote I/O station	
				Remote input (RX)	Remote output (RY)	Remote resistor (RWw)	Remote resistor (RWr)	Input	Output
When the master station's PC CPU is stopped (data link continuous)				Continue	All "0" * 1	Continue	Continue	Continue	All points OFF
When the local station's PC CPU is stopped (data link continuous)				All points off in the receive area from the stopped local station * 1	Continue	Continue	Continue	Continue	Continue
When the data link is stopped in the entire system	Input-data status setting of faulty station (SW4)	Master station	Clear	Clear	—	—	Keep	—	All points OFF
		Local station	Keep	Keep					
When a communication error (power off, etc.) occurred in a remote I/O station.	Input-data status setting of faulty station (SW4)	Master station	Clear	Clear the receive area from the remote I/O station with communication error.	Continue	Continue	Continue	—	All points OFF
			Keep	Keep the receive area from the remote I/O station with communication error.					
		Local station	Clear						
			Keep						
When a remote communication error (power off, etc.) occurred in a remote device station	Input-data status setting of faulty station (SW4)	Master station	Clear	Clear the receive area from the remote device station with communication error.	Continue	Continue	Keep the receive area from the remote device station with communication error.	Continue	Continue
			Keep	Keep the receive area from the remote device station with communication error.					
		Local station	Clear						
			Keep						
When there is a communication error (power off, etc.) with the local station.	Input-data status setting of faulty station (SW4)	Master station	Clear	Clear the receive area from the local station with communication error.	Continue	Continue	Keep the receive area from the local station with communication error.	Continue	Continue
			Keep	Keep the receive area from the local station with communication error.					
		Local station	Clear						
			Keep						

* 1 : Because Yn0 (refresh instruct) is turned OFF.

Data link status				Remote device station				Local station, standby master station, intelligent device station			
				Remote input (RX)	Remote output (RY)	Remote resistor (RWw)	Remote resistor (RWr)	Remote input (RX)	Remote output (RY)	Remote resistor (RWw)	Remote resistor (RWr)
When the master station's PC CPU is stopped (data link continuous)				Continue	All points OFF	Continue	Continue	All points OFF	Continue	Continue	Continue
When the local station's PC CPU is stopped (data link continuous)				Continue	Continue	Continue	Continue	Continue	All station's transmission areas are treated as "0". ※1 All points off in the receive area from the stopped local station	Continue	Continue
When the data link is stopped in the entire system	Input-data status setting of faulty station (SW4)	Master station	Clear	-	All points OFF	-	-				
		Keep									
		Local station	Clear					Clear	Clear the receive area from the other station.	Keep the receive area from the other station.	Keep
Keep	Keep	Keep the receive area from the other station.									
When a communication error (power off, etc.) occurred in a remote I/O station	Input-data status setting of faulty station (SW4)	Master station	Clear	Continue	Continue	Continue	Continue				
		Keep									
		Local station	Clear					Continue	Clear the receive area from the remote I/O station with communication error.	Continue	Continue
Keep	Keep the receive area from the remote I/O station with communication error.										
When a communication error (power off, etc.) occurred in a remote device station	Input-data status setting of faulty station (SW4)	Master station	Clear	-	-	-	-				
		Keep									
		Local station	Clear					Continue	Clear the receive area from the remote device station with communication error.	Keep the receive area from the remote device station with communication error.	Continue
Keep	Keep the receive area from the remote device station with communication error.										

* 1 : Because Yn0 (refresh instruct) is turned OFF.

Data link status				Remote device station				Local station, standby master station, intelligent device station			
				Remote input (RX)	Remote output (RY)	Remote resistor (RWw)	Remote resistor (RWr)	Remote input (RX)	Remote output (RY)	Remote resistor (RWw)	Remote resistor (RWr)
When there is a communication error (power off, etc.) with the local station.	Input-data status setting of faulty station (SW4)	Master station	Clear	Continue	Continue	Continue	Continue				
		Local station	Clear					Continue	Clear the receive area from the local station with communication error.	Keep the receive area from the local station with communication error.	Continue
			Keep						Keep the receive area from the local station with communication error.		

5.2 Link Scan Time

The link scan time of CC-Link is calculated as follows using :

[Link scan time (LS)]

$$LS = BT \{29.4 + (NI \times 4.8) + (NW \times 9.6) + (N \times 32.4) + (ni \times 4.8) + (nw \times 9.6)\} + ST$$

$$+ \{ \text{Number of communication faulty stations} \times 48 \times BT \times \text{Number of retries} \}^* \quad [\mu s]$$

BT: Constant (Transmission speed)

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
BT	51.2	12.8	3.2	1.6	0.8

NI : Last station number in a, b, and c

(including number of occupied stations and excluding number of reserved stations)

NW : Last station in b and c

(Including number of occupied stations and excluding number of reserved stations)

It should be the multiple of 8.

Last station number	1 to 8	9 to 16	17 to 24	25 to 32	33 to 40	41 to 48	49 to 56	57 to 64
NI, NW	8	16	24	32	40	48	56	64

N : Number of connected stations (excluding reserved stations)

ni : a + b + c (excluding reserved stations)

nw : b + c (excluding reserved stations)

ST : Constant (It should be the largest value from (1) to (3). When b = 0, (2) should be ignored and, when c = 0, (3) should be ignored.)

① $800 + (a \times 15)$

② $900 + (b \times 50)$

③ When $c \leq 26$: $1200 + (c \times 100)$

When $c > 26$: $3700 + \{(c - 26) \times 25\}$

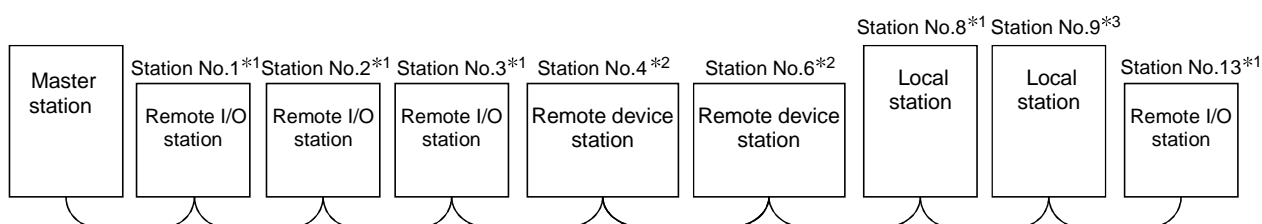
a : Total number of occupied stations for remote I/O stations

b : Total number of occupied stations for remote device stations

c : Total number of occupied stations for intelligent device stations (including local stations)

* : Only when there exist communication faulty stations (including error invalid stations and temporary error invalid stations)

(Example) When the transmission speed is at 2.5 Mbps in the following system configuration:



*1: 1 station occupied *2: 2 stations occupied *3: 4 stations occupied

BT = 3.2

ST = 1700

NI = 13 → 16

① $800 + (4 \times 15) = 860$

NW = 12 → 16

② $900 + (4 \times 50) = 1100$

N = 8

③ $1200 + (5 \times 100) = 1700$

ni = 13

a=4 b=4 c=5

nw = 9

$$LS = 3.2 \{29.4 + (16 \times 4.8) + (16 \times 9.6) + (8 \times 32.4) + (13 \times 4.8) + (9 \times 9.6)\} + 1700$$

$$= 3836.96 [\mu s]$$

$$= 3.84 [ms]$$

5.3 Transmission Delay Time

Indicates transmission delay time (time required for data transmission).

5.3.1 Master station ↔ remote I/O station

(1) Master station (RX) ← remote I/O station (input)

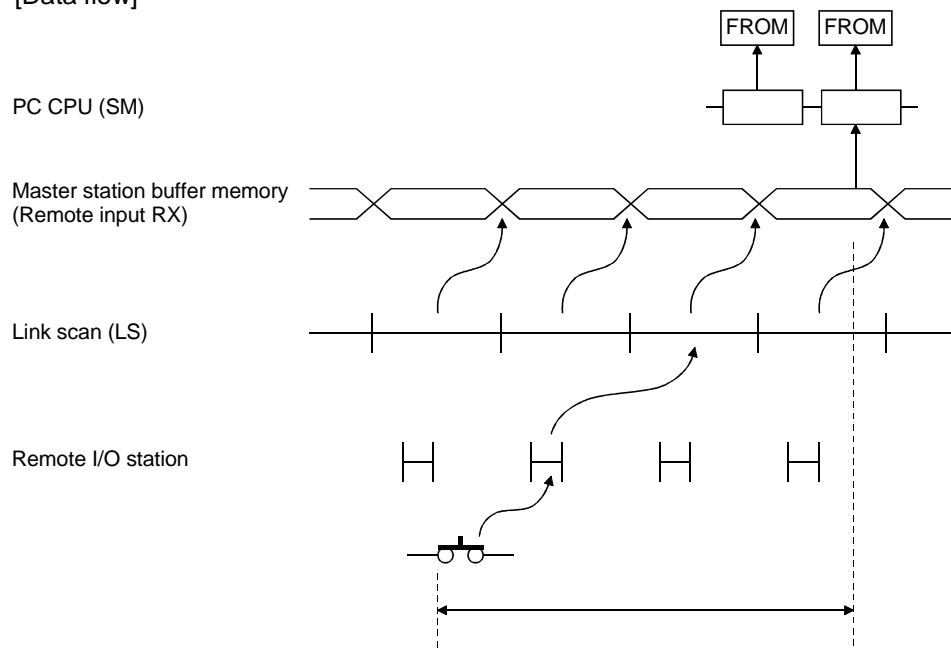
[Expression]

$$SM + LS \times 3 + \text{Remote I/O station response time [ms]}$$

SM: Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

[Data flow]



(2) Master station (RY) → remote I/O station (output)

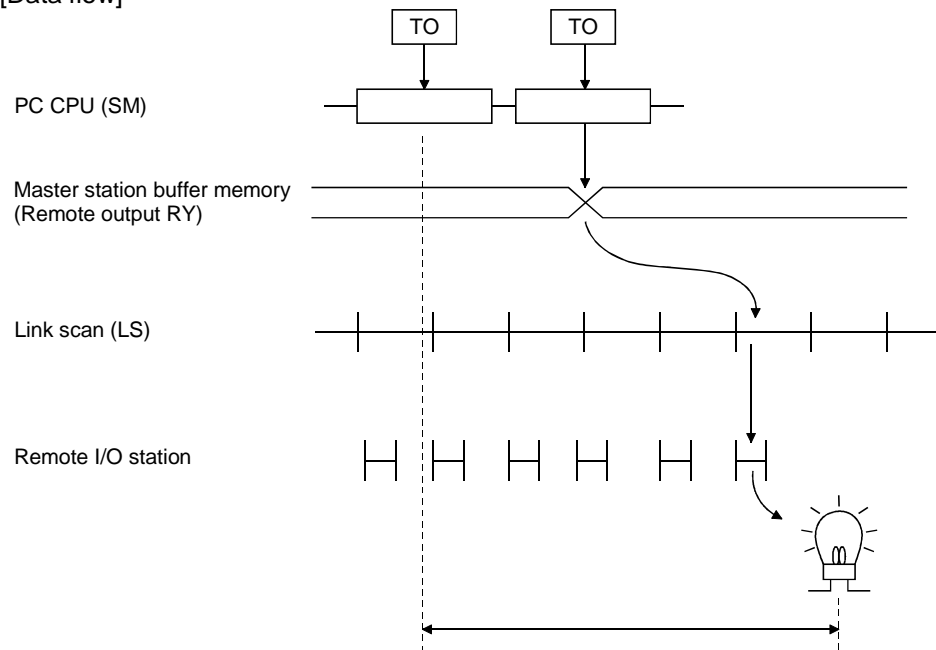
[Expression]

$$SM + LS \times 3 + \text{Remote I/O station response time [ms]}$$

SM: Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

[Data flow]



5.3.2 Master station ↔ remote device station

(1) Master station (RX) ← remote device station (RX)

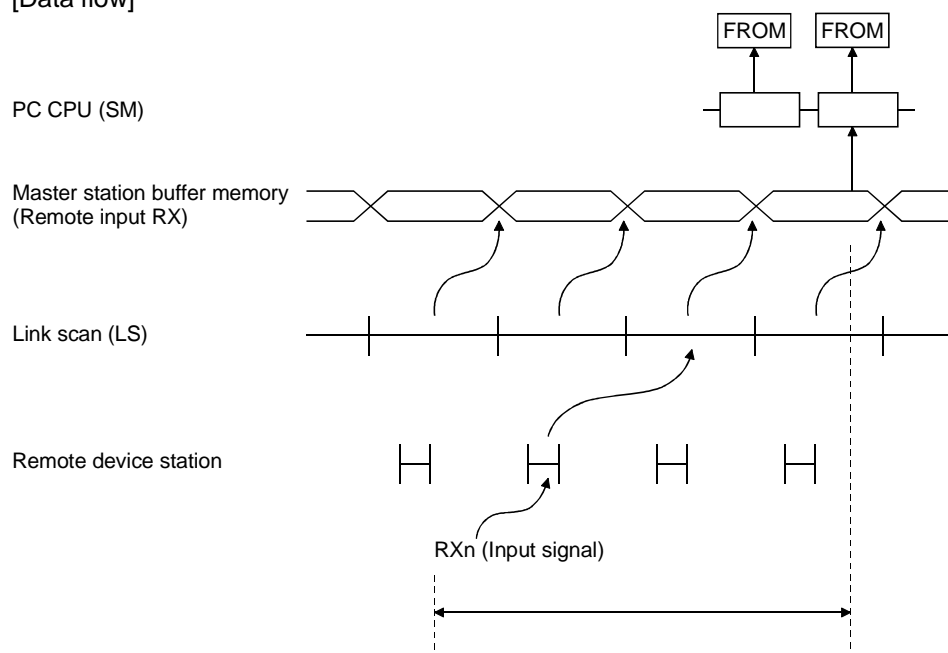
[Expression]

$$SM + LS \times 2 + \text{Remote device station process time [ms]}$$

SM: Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

[Data flow]



(2) Master station (RY) → remote device station (RY)

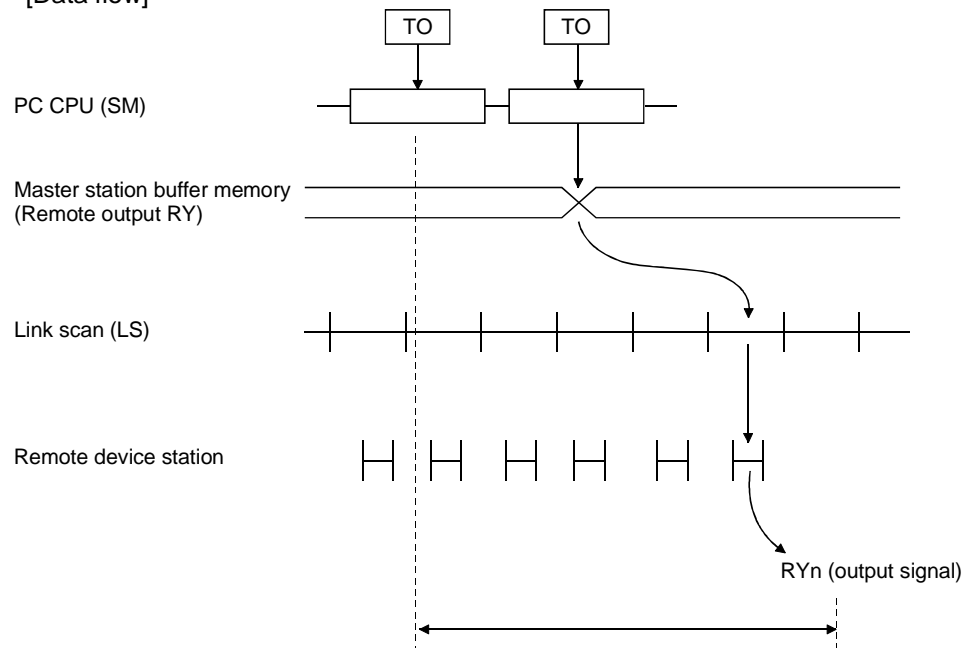
[Expression]

$$SM + LS \times 3 + \text{Remote device station process time [ms]}$$

SM: Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

[Data flow]



(3) Master station (RWw) → remote device station (RWw)

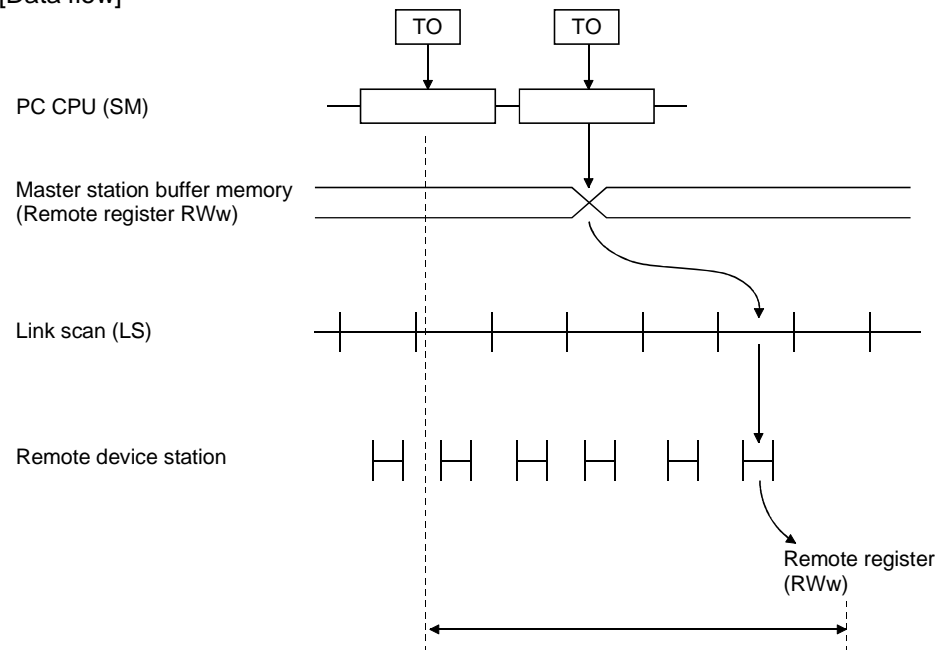
[Expression]

$$SM + LS \times 3 + \text{Remote device station process time [ms]}$$

SM: Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

[Data flow]



[Expression]

SM: Scan time of the master station's sequence program

[Data flow]



5.3.3 Master station ↔ local station

(1) Master station (RY) → local station (RX)

[Expression]

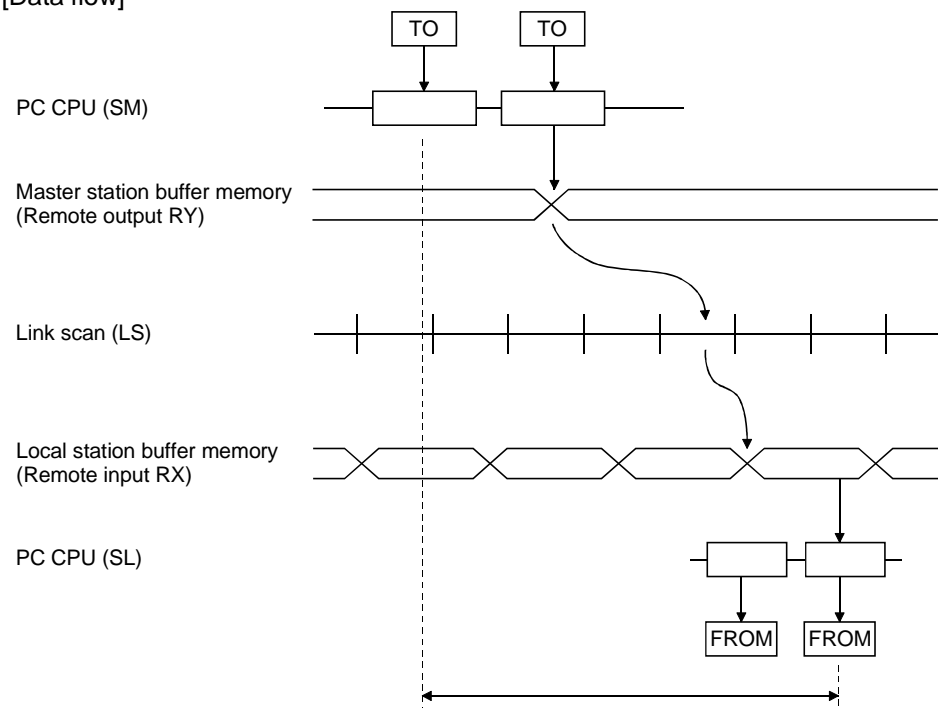
$$SM + LS \times 3 + SL \text{ [ms]}$$

SM : Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

SL : Scan time of the local station's sequence program

[Data flow]



(2) Master station (RX) ← local station (RY)

[Expression]

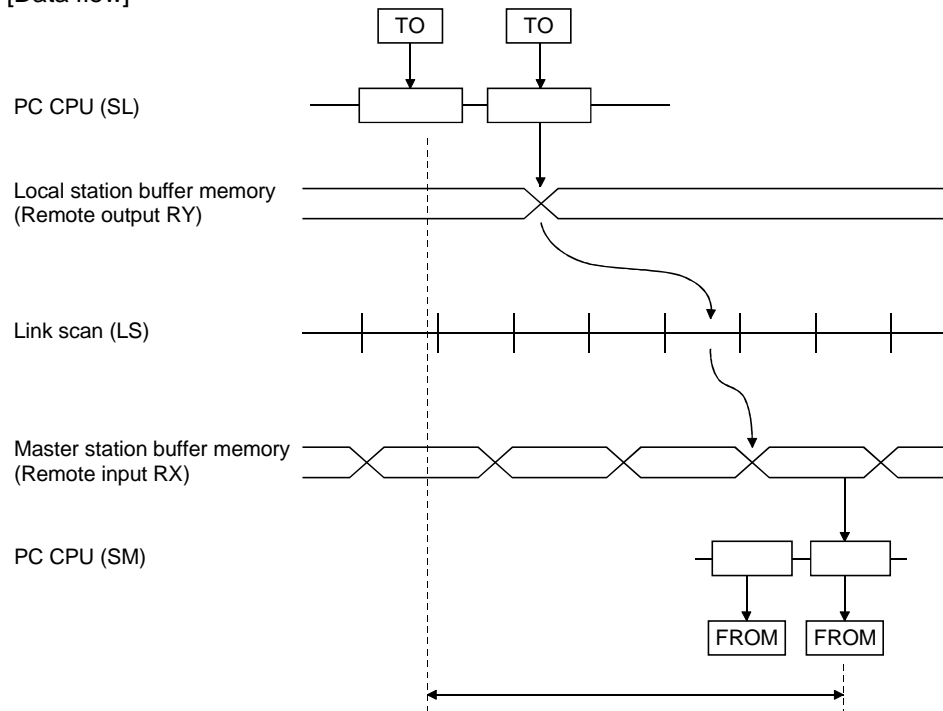
$$SM + LS \times 3 + SL \text{ [ms]}$$

SM : Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

SL : Scan time of the local station's sequence program

[Data flow]



(3) Master station (RWw) → local station (RWr)

[Expression]

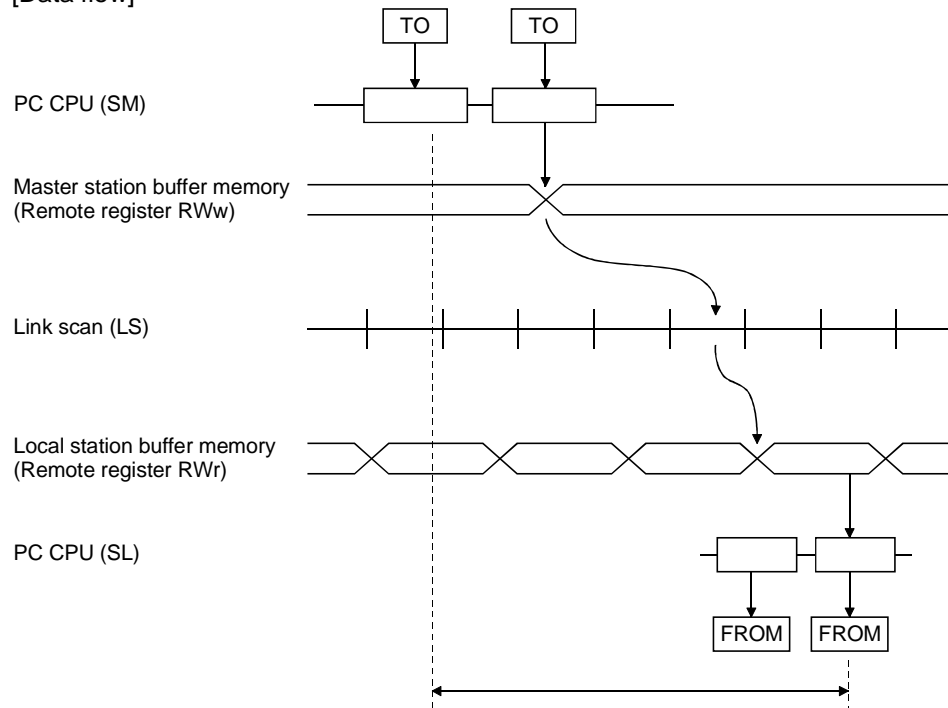
$$SM + LS \times 3 + SL \text{ [ms]}$$

SM : Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

SL : Scan time of the local station's sequence program

[Data flow]



(4) Master station (RWr) ← local station (RWw)

[Expression]

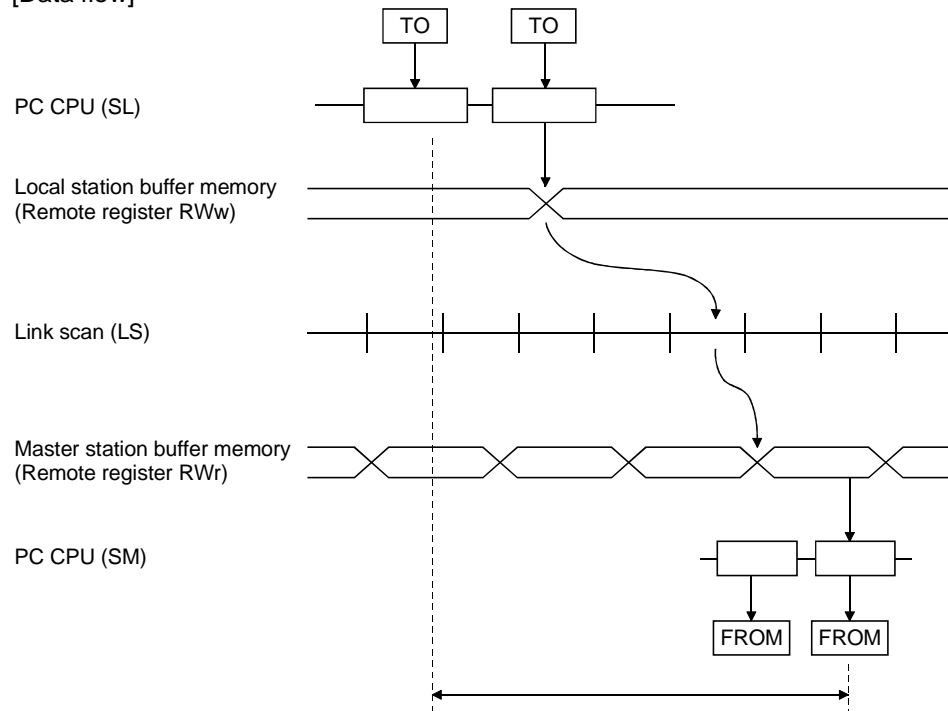
$$SM + LS \times 3 + SL \text{ [ms]}$$

SM : Scan time of the master station's sequence program

LS : Link scan time (See Section 5.2.)

SL : Scan time of the local station's sequence program

[Data flow]



5.3.4 Master station ↔ intelligent device station

The transmission delay time between the master station and intelligent device station varies depending on the type of intelligent device station.

Refer to the User's Manual (Details) of the intelligent device used.

5.4 Dedicated Instruction Processing Time

Indicates the dedicated instruction processing time (time from when an instruction is issued until a reply is received).

5.4.1 Master station ↔ local station

(1) Master station → local station

Indicates the time from when the master station issues an instruction until it receives a reply from a local station.

[Expression]

(a) For reading

$$MB = [SM + LS \times 2 + \alpha + SL + LS \times 2 + \{(No. \text{ of reading points} + 16)/16\}^{*1} \times LS + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SM: Master station sequence scan time

SL: Local station sequence scan time

LS: Link scan time (Refer to section 5.2)

α : Send end internal processing time

No. of reading points	1 to 120 points	121 to 240 points	241 to 360 points	361 to 480 points
α	LS	LS × 2	LS × 3	LS × 4

β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS × 2	LS × 4	LS × 6	LS × 7

N: No. of execution instructions simultaneously

*1: Raise the decimals to a unit

(Example) When master station sequence scan time is 10ms, local station sequence scan time is 10ms, link scan time is 5ms, no. of reading points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned}
 MB &= [SM + LS \times 2 + \alpha + SL + LS \times 2 + \{(No. \text{ of reading points} + 16)/16\}^{*1} \times LS + \beta + \text{constant bps}] \times N \\
 &= [10 + 5 \times 2 + 5 + 10 + 5 \times 2 + \{(20 + 16)/16\}^{*1} \times 5 + 5 + 5 \times 7] \times 1 \\
 &= [10 + 5 \times 2 + 5 + 10 + 5 \times 2 + 3 \times 5 + 5 + 5 \times 7] \times 1 \\
 &= 100 \text{ [ms]}
 \end{aligned}$$

(b) For writing

$$MB = [SM + LS + \{(No. \text{ of writing points} + 16)/72\}^{*1} \times LS + \alpha + SL + LS \times 3 + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SM : Master station sequence scan time

SL : Local station sequence scan time

LS : Link scan time (Refer to section 5.2)

α : Send end internal processing time

LS

β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS × 2	LS × 4	LS × 6	LS × 7

N : No. of execution instructions simultaneously

*1 : Raise the decimals to a unit

(Example) When master station sequence scan time is 10ms, local station sequence scan time is 10ms, link scan time is 5ms, no. of writing points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned}
 MB &= [SM + LS + \{(No. \text{ of writing points} + 16)/72\}^{*1} \times LS + \alpha + SL + LS \times 3 + \beta + \text{constant bps}] \times N \\
 &= [10 + 5 + \{(20 + 16)/72\}^{*1} \times 5 + 5 + 10 + 5 \times 3 + 5 + 5 \times 7] \times 1 \\
 &= [10 + 5 + 1 \times 5 + 5 + 10 + 5 \times 3 + 5 + 5 \times 7] \times 1 \\
 &= 90 \text{ [ms]}
 \end{aligned}$$

(2) Local station → Master station

Indicates the time from when a local station issues an instruction until it receives a reply from the master station.

[Expression]

(a) For reading

$$MB = [SL + LS \times 3 + \alpha + SM + LS + \{(No. \text{ of reading points} + 16)/72\}^{*1} \times LS + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SM : Master station sequence scan time

SL : Local station sequence scan time

LS : Link scan time (Refer to section 5.2)

α : Send end internal processing time

LS

β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS × 2	LS × 4	LS × 6	LS × 7

N : No. of execution instructions simultaneously

*1 : Raise the decimals to a unit

(Example) When master station sequence scan time is 10ms, local station sequence scan time is 10ms, link scan time is 5ms, no. of reading points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned}
 MB &= [SL + LS \times 3 + \alpha + SM + LS + \{(No. \text{ of reading points} + 16)/72\}^{*1} \times LS + \beta + \text{constant bps}] \times N \\
 &= [10 + 5 \times 3 + 5 + 10 + 5 + \{(20 + 16)/72\} \times 5 + 5 + 5 \times 7] \times 1 \\
 &= [10 + 5 \times 3 + 5 + 10 + 5 + 1 \times 5 + 5 + 5 \times 7] \times 1 \\
 &= 90 \text{ [ms]}
 \end{aligned}$$

(b) For writing

$$MB = [SL + LS \times 2 + \{(No. \text{ of writing points} + 16)/16\}^{*1} \times LS + \alpha + SM + LS \times 2 + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SM: Master station sequence scan time

SL: Local station sequence scan time

LS: Link scan time (Refer to section 5.2)

 α : Send end internal processing time

No. of writing points	1 to 120 points	121 to 240 points	241 to 360 points	361 to 480 points
α	LS	LS \times 2	LS \times 3	LS \times 4

 β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS \times 2	LS \times 4	LS \times 6	LS \times 7

N: No. of execution instructions simultaneously

*1: Raise the decimals to a unit

(Example) When master station sequence scan time is 10ms, local station sequence scan time is 10ms, link scan time is 5ms, no. of writing points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned}
 MB &= [SL + LS \times 2 + \{(No. \text{ of writing points} + 16)/16\}^{*1} \times LS + \alpha + SM + LS \times 2 + \beta + \text{constant bps}] \times N \\
 &= [10 + 5 \times 2 + \{(20 + 16)/16\} \times 5 + 5 + 10 + 5 \times 2 + 5 + 5 \times 7] \times 1 \\
 &= [10 + 5 \times 2 + 3 \times 5 + 5 + 10 + 5 \times 2 + 5 + 5 \times 7] \times 1 \\
 &= 100 \text{ [ms]}
 \end{aligned}$$

5.4.2 Local station ↔ local station

(1) Local station → local station

Indicates the time from when a local station issues an instruction until it receives a reply from another local station.

[Expression]

(a) For reading

$$MB = [SL_1 + LS \times 3 + \alpha + SL_2 + LS \times 2 + \{(No. \text{ of reading points} + 16)/16\}^{*1} \times LS + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SL₁: Send end local station sequence scan time

SL₂: Receive end local station sequence scan time

LS : Link scan time (Refer to section 5.2)

α : Send end internal processing time

No. of reading points	1 to 120 points	121 to 240 points	241 to 360 points	361 to 480 points
α	LS	LS × 2	LS × 3	LS × 4

β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS × 2	LS × 4	LS × 6	LS × 7

N : No. of execution instructions simultaneously

*1 : Raise the decimals to a unit

(Example) When send end local station sequence scan time is 10ms, receive end local station sequence scan time is 10ms, link scan time is 5ms, no. of reading points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned} MB &= [SL_1 + LS \times 3 + \alpha + SL_2 + LS \times 2 + \{(20 + 16)/16\}^{*1} \times LS + \beta + \text{constant bps}] \times N \\ &= [10 + 5 \times 3 + 5 + 10 + 5 \times 2 + \{(20 + 16)/16\}^{*1} \times 5 + 5 + 5 \times 7] \times 1 \\ &= [10 + 5 \times 3 + 5 + 10 + 5 \times 2 + 3 \times 5 + 5 + 5 \times 7] \times 1 \\ &= 105 \text{ [ms]} \end{aligned}$$

(b) For writing

$$MB = [SL_1 + LS \times 2 + \{(No. \text{ of writing points} + 16)/16\}^{*1} \times LS + \alpha + SL_2 + LS \times 3 + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SL₁: Send end local station sequence scan time

SL₂: Receive end local station sequence scan time

LS : Link scan time (Refer to section 5.2)

α : Send end internal processing time

No. of writing points	1 to 120 points	121 to 240 points	241 to 360 points	361 to 480 points
α	LS	LS × 2	LS × 3	LS × 4

β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS × 2	LS × 4	LS × 6	LS × 7

N : No. of execution instructions simultaneously

*1 : Raise the decimals to a unit

(Example) When send end local station sequence scan time is 10ms, receive end local station sequence scan time is 10ms, link scan time is 5ms, no. of writing points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned} MB &= [SL_1 + LS \times 2 + \{(No. \text{ of writing points} + 16)/16\}^{*1} \times LS + \alpha + SL_2 + LS \times 3 + \beta + \text{constant bps}] \times N \\ &= [10 + 5 \times 2 + \{(20 + 16)/16\}^{*1} \times 5 + 5 + 10 + 5 \times 3 + 5 + 5 \times 7] \times 1 \\ &= [10 + 5 \times 2 + 3 \times 5 + 5 + 10 + 5 \times 3 + 5 + 5 \times 7] \times 1 \\ &= 105 \text{ [ms]} \end{aligned}$$

5.4.3 Master station ↔ intelligent device station

(1) Master station → intelligent device station

Indicates the time from when the master station issues an instruction until it receives a reply from an intelligent device station.

[Expression]

(a) For reading

$$MB = [SM + LS \times 2 + \alpha + SM + LS \times 2 + \{(No. \text{ of reading points} + 16)/16\}^{*1} \times LS + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SM: Master station sequence scan time

LS: Link scan time (Refer to section 5.2)

α : Send end internal processing time

No. of reading points	1 to 120 points	121 to 240 points	241 to 360 points	361 to 480 points
α	LS	LS × 2	LS × 3	LS × 4

β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS × 2	LS × 4	LS × 6	LS × 7

N: No. of execution instructions simultaneously

*1: Raise the decimals to a unit

(Example) When master station sequence scan time is 10ms, link scan time is 5ms, no. of reading points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned} MB &= [SM + LS \times 2 + \alpha + SM + LS \times 2 + \{(No. \text{ of reading points} + 16)/16\}^{*1} \times LS + \beta + \text{constant bps}] \times N \\ &= [10 + 5 \times 2 + 5 + 10 + 5 \times 2 + \{(20 + 16)/16\}^{*1} \times 5 + 5 + 5 \times 7] \times 1 \\ &= [10 + 5 \times 2 + 5 + 10 + 5 \times 2 + 3 \times 5 + 5 + 5 \times 7] \times 1 \\ &= 100 \text{ [ms]} \end{aligned}$$

(b) For writing

$$MB = [SM + LS + \{(No. \text{ of writing points} + 16)/72\}^{*1} \times LS + \alpha + SM + LS \times 3 + \beta + \text{constant bps}] \times N \text{ [ms]}$$

SM: Master station sequence scan time

LS : Link scan time (Refer to section 5.2)

α : Send end internal processing time

LS

β : Receive end internal processing time

LS

[Constant bps]

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
constant bps	LS	LS × 2	LS × 4	LS × 6	LS × 7

N : No. of execution instructions simultaneously

*1 : Raise the decimals to a unit

(Example) When master station sequence scan time is 10ms, link scan time is 5ms, no. of writing points is 20 words, transmission speed is 10Mbps, no. of execution instructions simultaneously is 1

$$\begin{aligned} MB &= [SM + LS + \{(No. \text{ of writing points} + 16)/72\}^{*1} \times LS + \alpha + SM + LS \times 3 + \beta + \text{constant bps}] \times N \\ &= [10 + 5 + \{(20 + 16)/72\}^{*1} \times 5 + 5 + 10 + 5 \times 3 + 5 + 5 \times 7] \times 1 \\ &= [10 + 5 + 1 \times 5 + 5 + 10 + 5 \times 3 + 5 + 5 \times 7] \times 1 \\ &= 90 \text{ [ms]} \end{aligned}$$

MEMO

[illegible]

6. Parameter Setting

The parameter setting necessary to perform data link with CC-Link is described.

6.1 Procedure from Parameter Setting to Data Link Startup

The flow from setting the parameters to starting the data link is described.

6.1.1 Relationship between buffer memory, E²PROM and internal memory

The relationship between the master station buffer memory, E²PROM and the internal memory is described.

(1) Buffer memory

This is a temporary storage area to write the parameter information to E²PROM or internal memory.

When the module power is turned off, the parameter information is erased.

(2) E²PROM

By just turning on the data-link start request by the E²PROM parameters (Yn8), data link can be started.

This eliminates having to write parameters to the buffer memory every time when starting up the master station.

However, the parameters must be stored in E²PROM by the parameter storage request to E²PROM (YnA) beforehand.

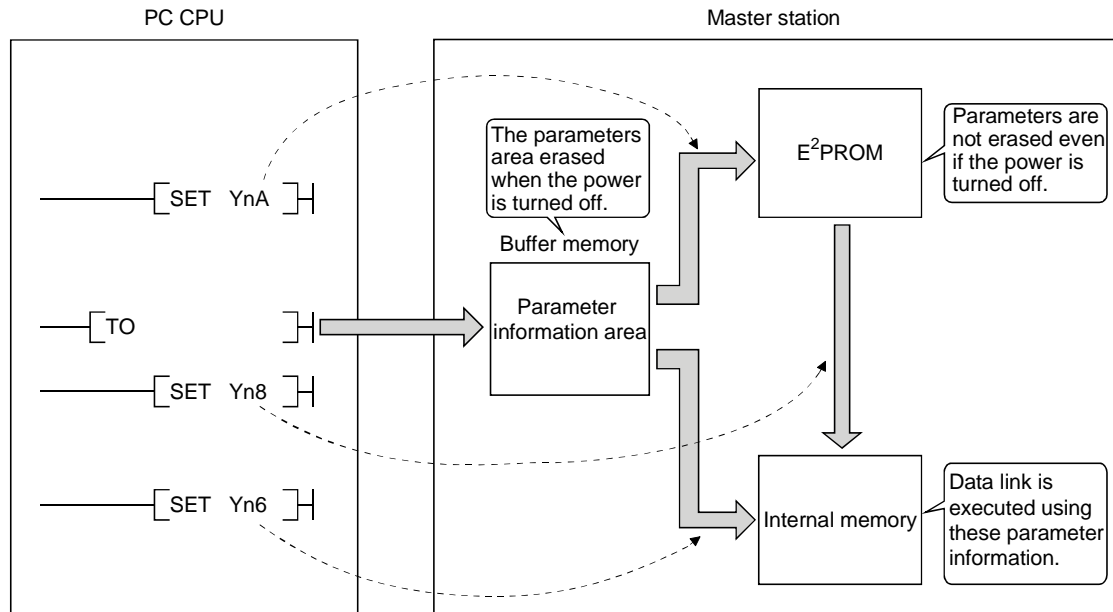
Even when the power is turned off, the E²PROM parameter information will be kept.

The registration limit to E²PROM is "10,000 times".

(3) Internal memory

Data link is executed using the parameter information stored in the internal memory.

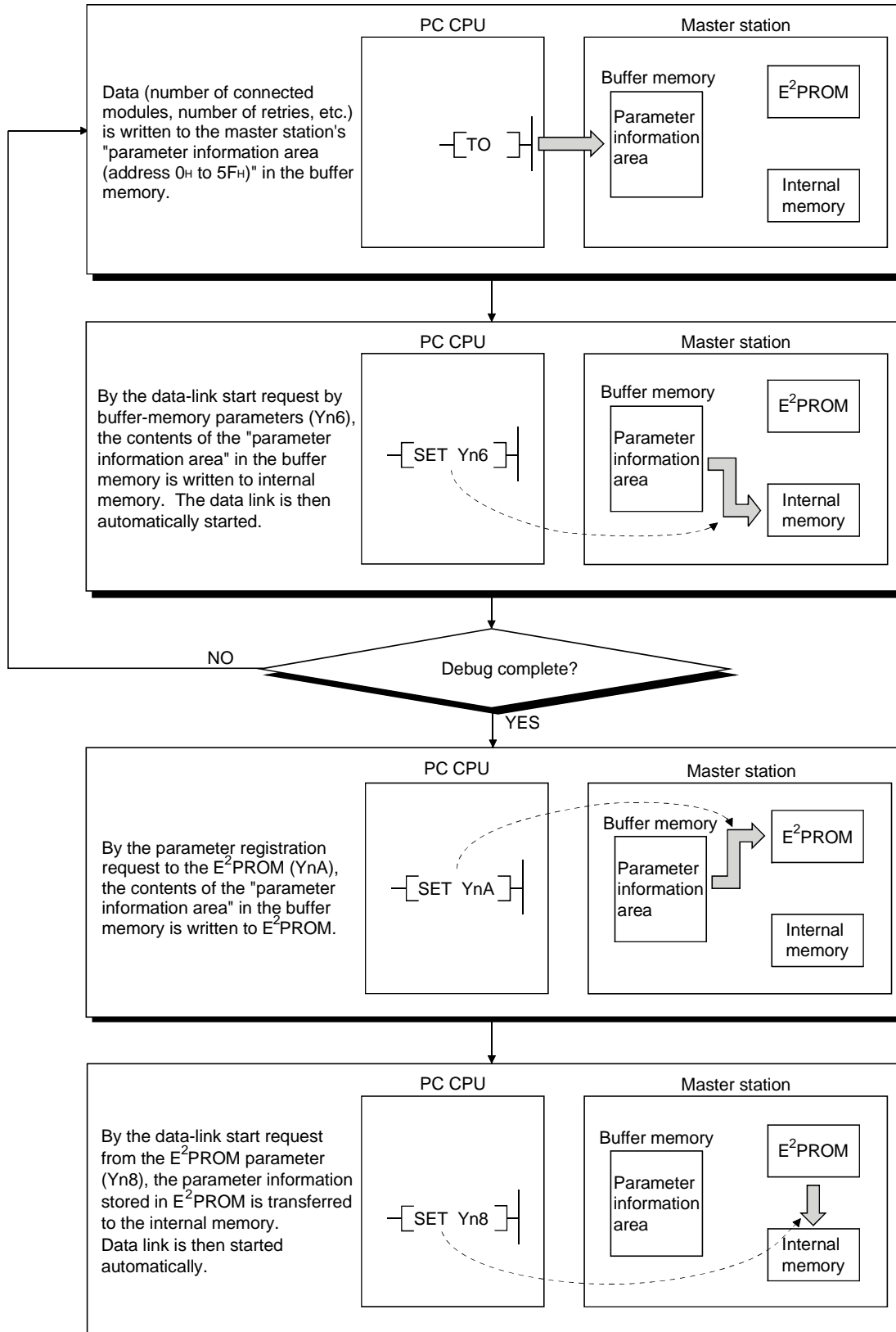
When the module power is turned off, the parameters are erased.

**POINT**

"Data link by buffer-memory parameters" is recommended for starting system debugging, and "data link by E²PROM parameters" is recommended for the operation after debugging. Therefore, the number of steps in the operation program can be reduced (thus, shortens the scan time).

6.1.2 Procedure from parameter setting to data link start

Follow the procedure below:



6.2 Parameter Settings

The items to set in the master station's "parameter information area (address 0H to 5FH)" in the buffer memory is shown in Table 6.1.

Refer to Section 3.5.2 for details of each item.

Table 6.1 Parameter setting items

Setting item	Description	Buffer memory address	Reference						
Number of connected units	Sets the number of remote and local station units connected to the master station (including reserved stations) Default : 64 (units) Setting range : 1 to 64 (units)	1H	Section 3.5.2 (1) (a)						
Number of retries	Sets the number of retries when there is a communication error. Default : 3 (times) Setting range : 1 to 7 (times)	2H	Section 3.5.2 (1) (b)						
Number of automatic return units	Sets the number of remote and local stations that can be recovered with one link scan. Default : 1 (units) Setting range : 1 to 10 (units)	3H	Section 3.5.2 (1) (c)						
Operation specification when CPU is down	Specifies the data-link status when the master station PC CPU has an error. Default : 0 (stop) Setting range : 0 (stop) 1 (continue)	6H	Section 3.5.2 (1) (d)						
Reserved station specification	Specifies reserved stations. Default : 0 (no setting) Setting range : Turn on the bit corresponding to the station number.	10H to 13H	Section 3.5.2 (1) (e)						
Invalid station specification	Specifies invalid stations. Default : 0 (no setting) Setting range : Turn on the bit corresponding to the station number.	14H to 17H	Section 3.5.2 (1) (f)						
Station information	Sets the connected remote and local station type. Default : 0101H (remote I/O station, occupies 1 station, station No. 1) to 0140H (remote I/O station, occupies 1 station, station No. 64) Setting range : As follows. <table><tr><td>b15 to b12</td><td>b11 to b8</td><td>b7 to b0</td></tr><tr><td>Station type</td><td>Number of occupied stations</td><td>Station number</td></tr></table> <div><div>0: Remote I/O station 1: Remote device station 2: Intelligent device station (including local stations)</div><div>1: Occupies 1 station 2: Occupies 2 stations 3: Occupies 3 stations 4: Occupies 4 stations</div><div>1 to 64 (01H to 40H)</div></div>	b15 to b12	b11 to b8	b7 to b0	Station type	Number of occupied stations	Station number	20H (1st station) to 5FH (64th station)	Section 3.5.2 (1) (g)
b15 to b12	b11 to b8	b7 to b0							
Station type	Number of occupied stations	Station number							

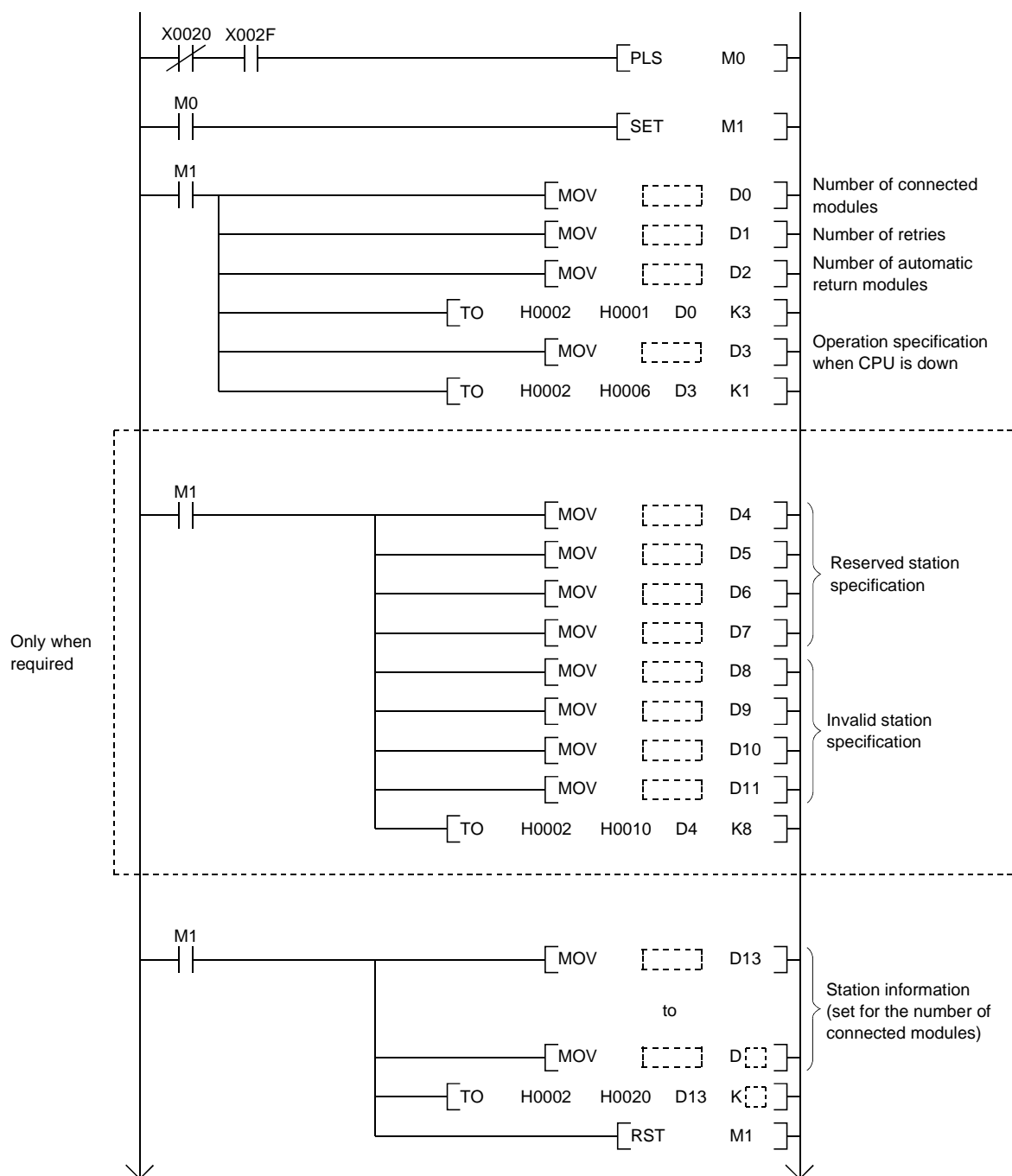
6.3 Setting from a Sequence Program

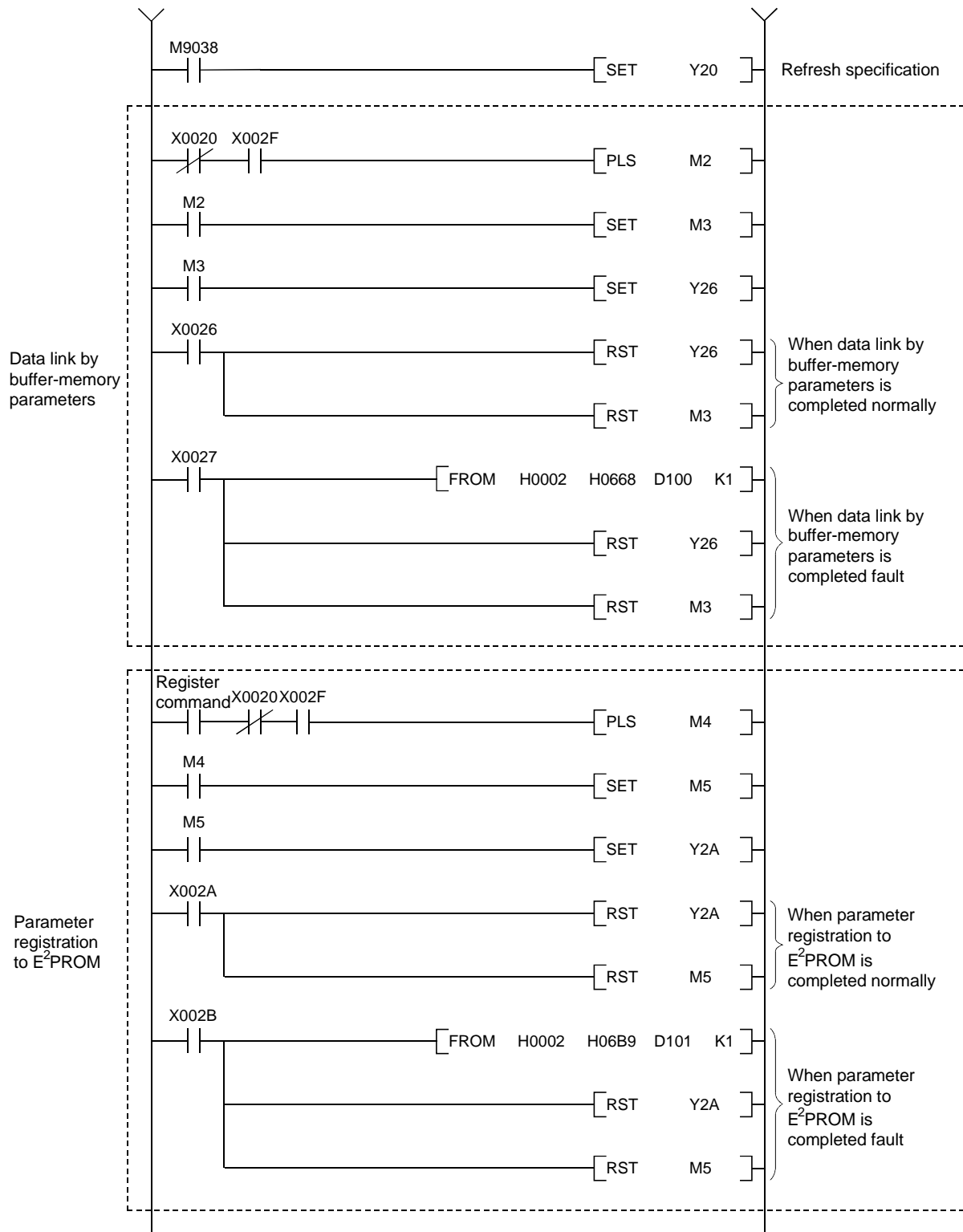
The parameter setting from a sequence program is described.

(1) Program overview

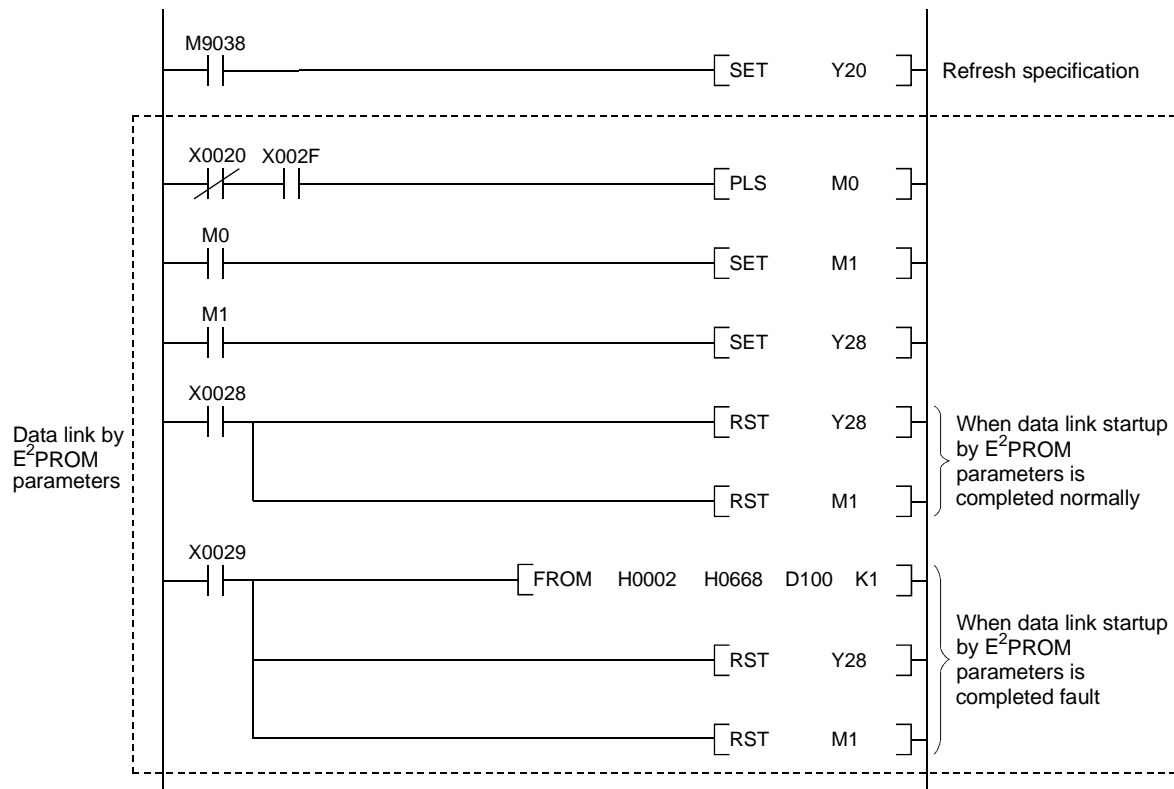
This program assumes that the master station's first I/O number is X/Y20 to 3F.

(a) When debugging





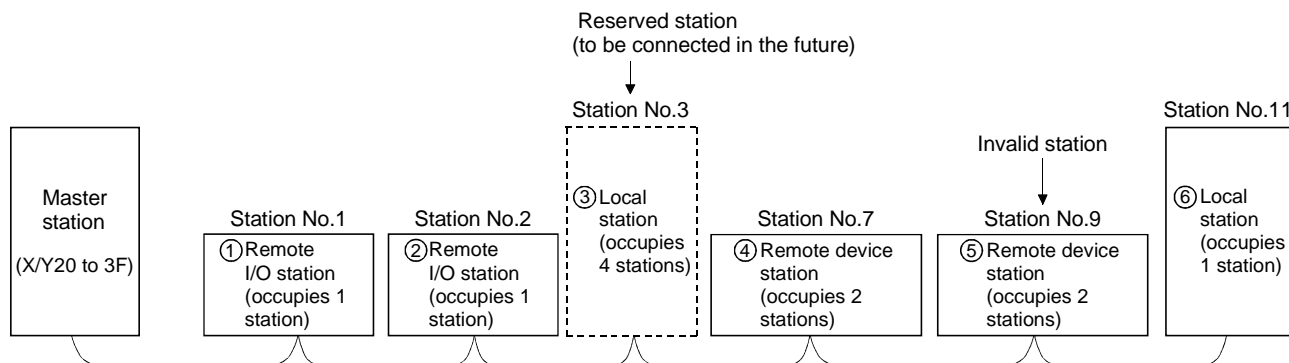
(b) During operation



(2) Program example

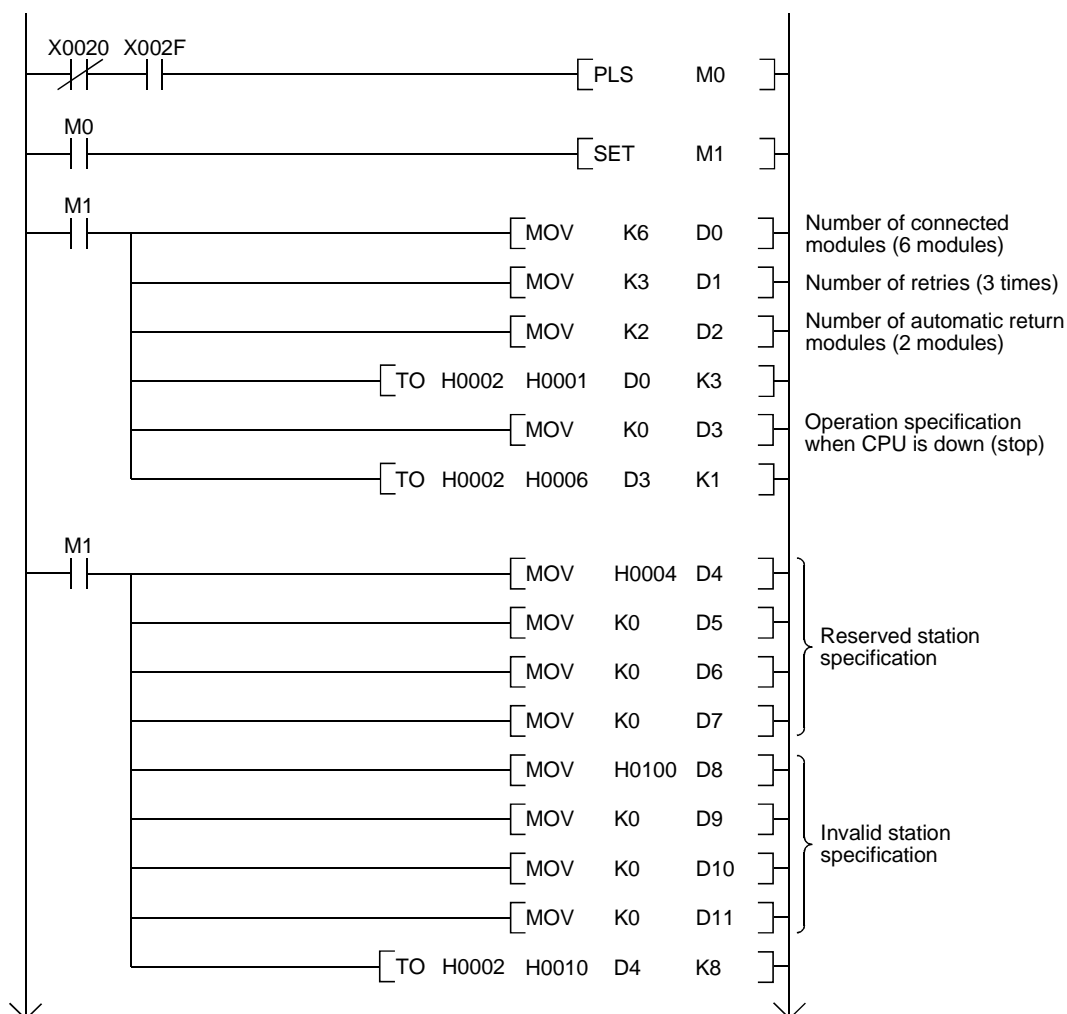
A parameter-setting program example with the following system configuration is shown below:

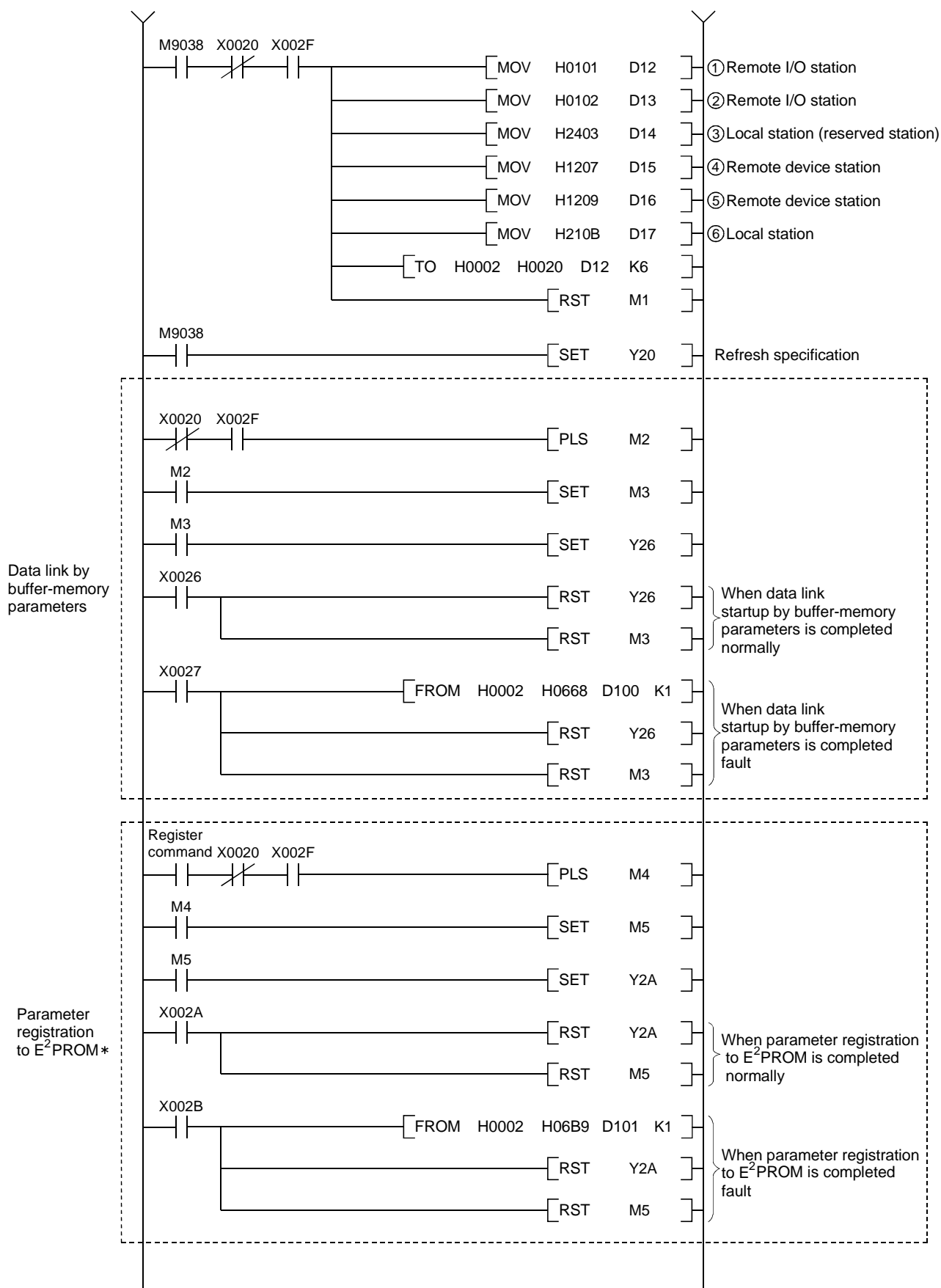
(a) System configuration example



(b) Program example

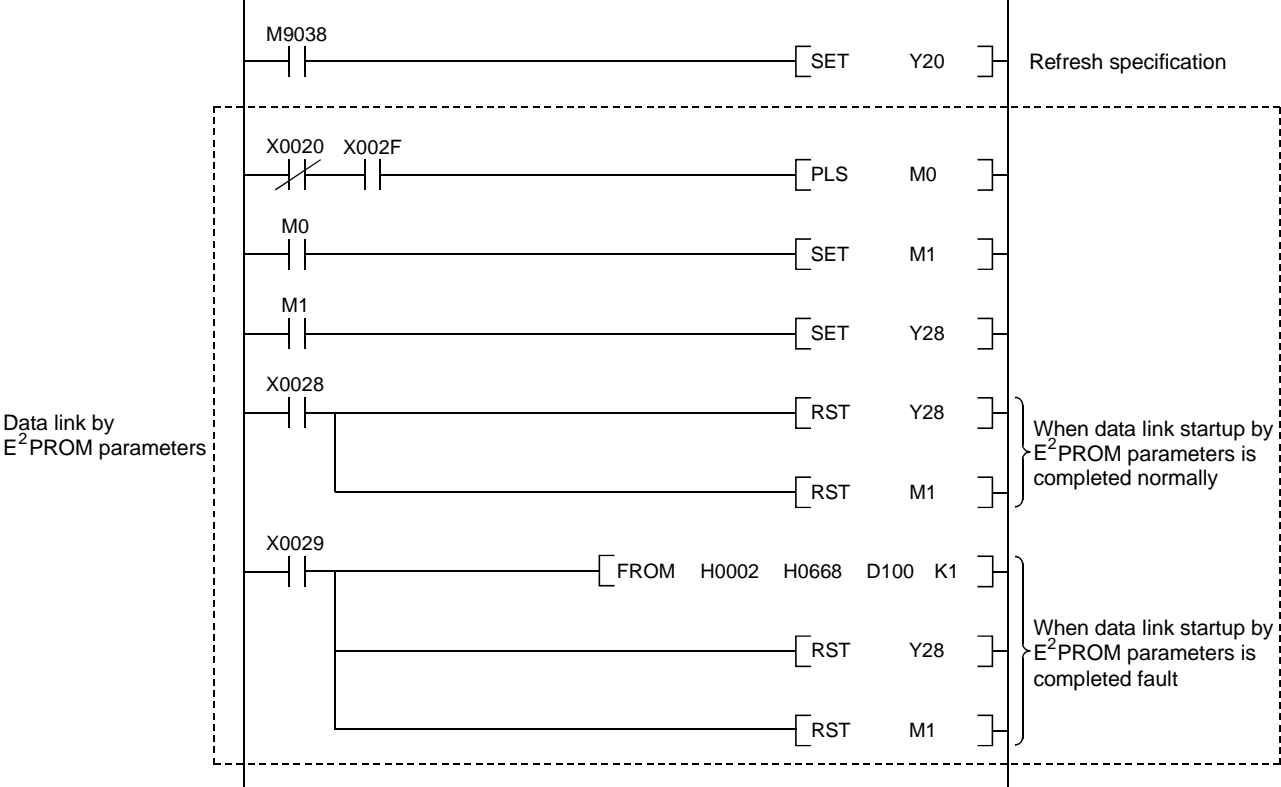
① When debugging





*: Refer to Section 8.2 when using the software version E (manufactured in Aug., 2001) or later of the A1SJ61BT11.

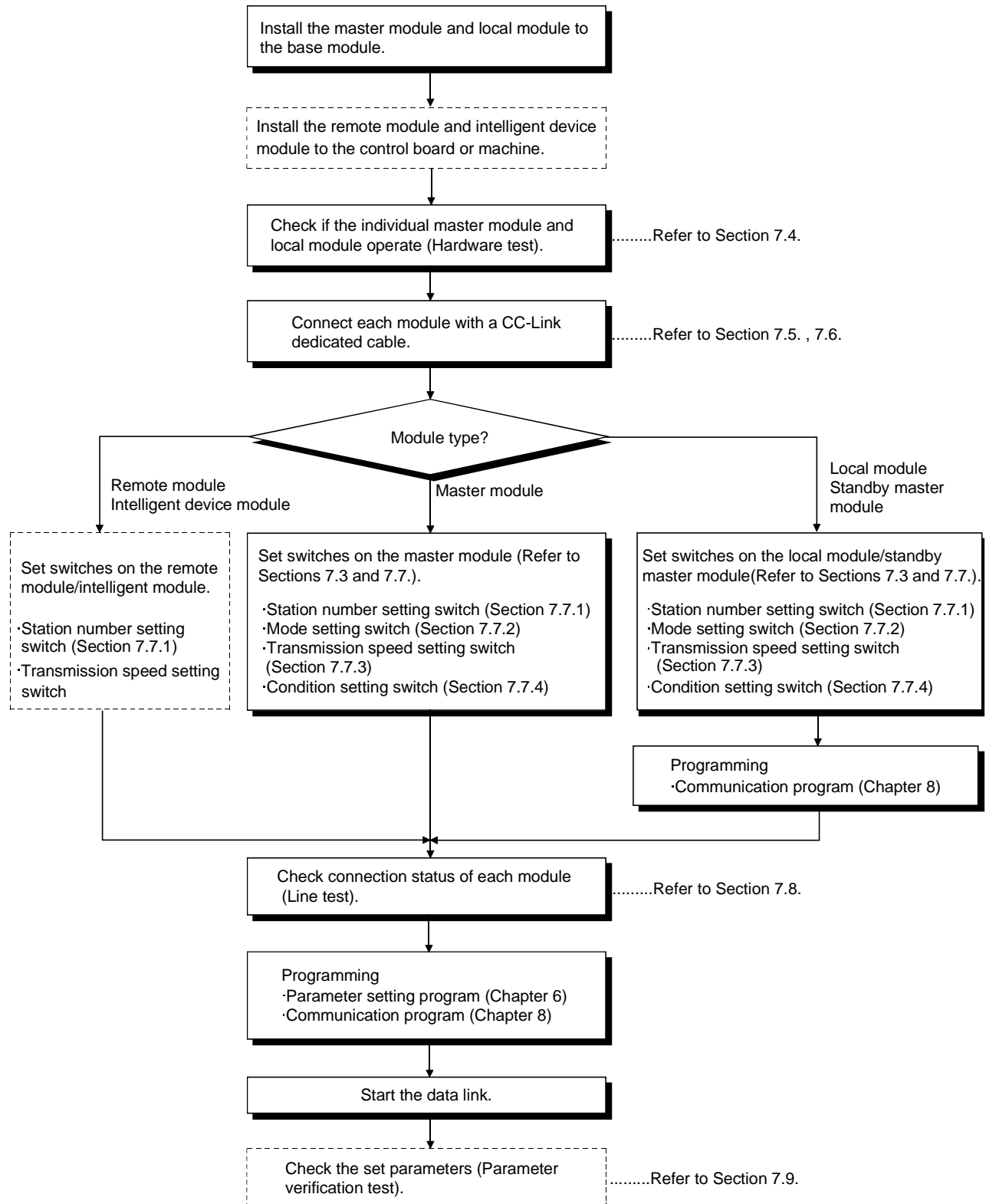
② During operation



7. Data Link Procedure

7.1 Data Link Procedure

The procedure of performing CC-Link's data link is shown below:



7.2 Installation and Setting

The precautions from when opening the package to installing the master-local module are described.

Refer to the User's Manual of your PC CPU module for details of the module installation and setting.

7.2.1 Precautions when handling the module

- (1) Since the module case-terminal is made of resin, do not apply strong shock or drop them.
- (2) Do not remove the module's print board from the case. It may cause a breakdown.
- (3) When wiring, be careful not to let foreign matter such as wire chips get inside the module. If this happens, remove them.
- (4) Tighten the module's installation screws and terminal screws with the following torque:

Screw position	Tightening torque range N-cm
Module installation screw (M4 screw)	78 to 117
Terminal-block screw (M3.5 screw)	59 to 88
Terminal-block installation screw (M3.5 screw)	59 to 88

POINT

Be sure to turn off the power supply to the applicable station before installing or removing the terminal block.
If the terminal block is installed or removed without turning off the power supply to the applicable station, correct data transmission cannot be guaranteed.

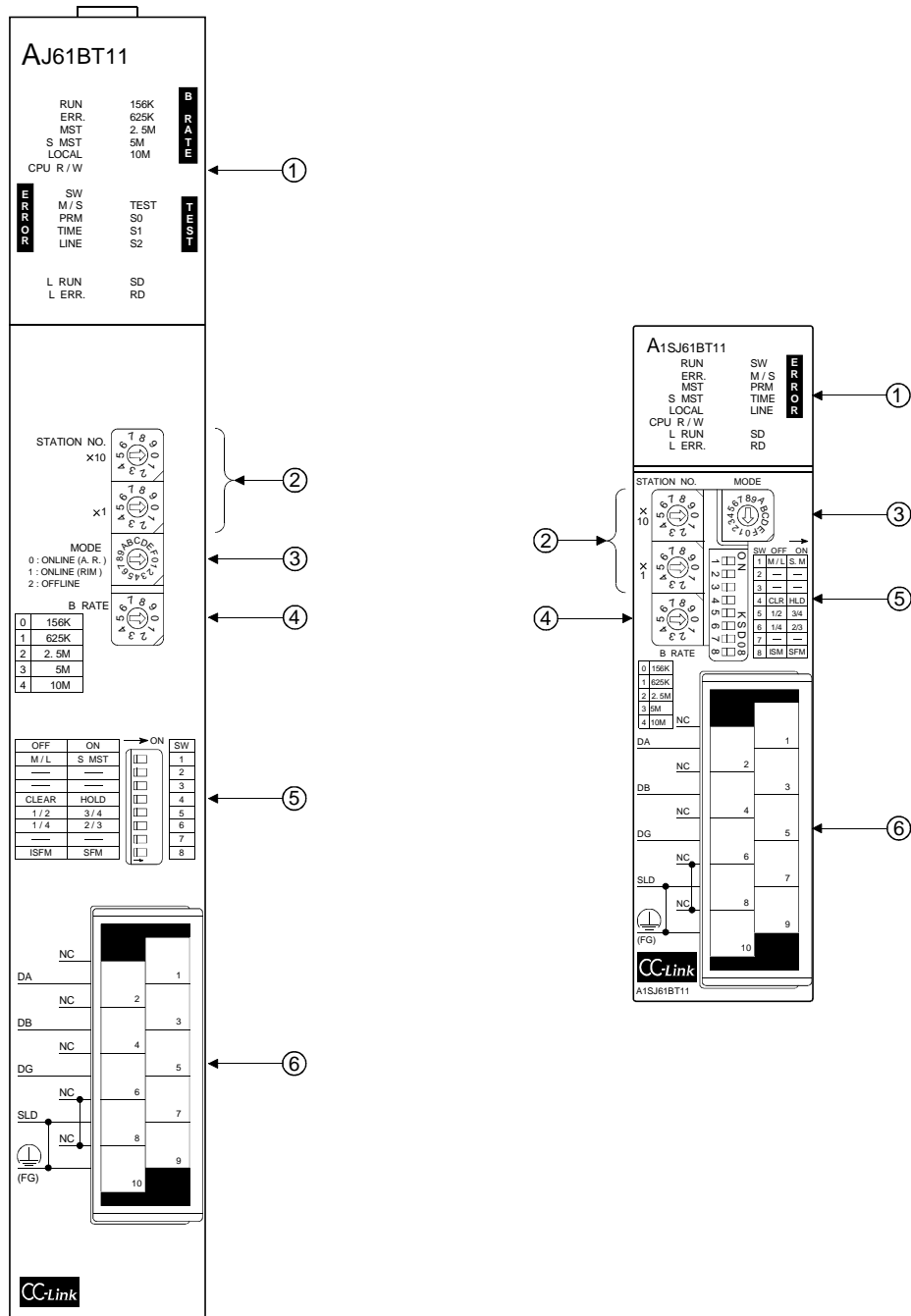
7.2.2 Setting environment

To install the A-series PC, avoid the following environment:

- (1) Areas where the ambient temperature exceeds the range of 0 to 55°C
- (2) Areas where the ambient humidity exceeds the range of 10 to 90%RH
- (3) Areas where condensation appears from sudden temperature changes
- (4) Areas with corrosive or flammable gas
- (5) Areas with a lot of dust, conductive metal pieces, oil mist, sodium or organic solvents
- (6) Areas with direct sunlight
- (7) Areas where strong electric or magnetic fields are formed
- (8) Areas where direct vibration or shock is applied

7.3 Name of Each Part and Settings

The name of each part in the master/local module, contents of LED display and the setting method of each switch are described.



No.	Name	Description																																																																																																																																		
①	LED display	The data-link status can be checked from the LED on status.																																																																																																																																		
		LED name	Description	LED display status				Master station (Standby master station)		Local station (Standby master station)		When normal	When error	When normal	When error	RUN	ON: Module is normal. OFF: There is a watchdog timer error.	On	Off	On	Off	ERR.	Indicates the communication status with the station set in the parameter. ON: Communication error at all stations. Flashing: Communication faulty station exists.	Off	On or flashing	Off	On or flashing	MST	ON: Set as master station.	On	—	Off	—	S MST	ON: Set as a standby master station (planned in the future).	(On)	—	(On)	—	LOCAL	ON: Set as a local station.	Off	—	On	—	CPU R/W	ON: Communicating with PC CPU. (FROM/TO)	On	Off	On	Off	ERROR	SW	ON: Switch setting error	Off	On	Off	On	M/S	ON: Exist already master station on the same line. Flashing: Occupied station count overlapping (With the exception of the first station number overlapping)	Off	On or flashing	—	—	PRM	ON: Parameter setting error.	Off	On	—	—	TIME	ON: Open cable or no response from all stations due to the influence of noise on the transmission path.	Off	On	—	—	LINE	ON: Cable is disconnected. Or noise, etc. is occurring at the transmission route.	Off	On	Off	On	L RUN	ON: Data link in progress (host)	On	Off	On	Off	L ERR.	ON: Communication error (host) Flashing at regular intervals : Setting of any of the switches and like 2 to 5 was changed while power was on. Flashing at irregular intervals : Terminating resistor not fitted, or module and/or CC-Link dedicated cable affected by noise.	Off	On or flashing	Off	On or flashing	BRATE	156K	ON: Transmission speed is set at "156 Mbps"	④ Transmission speed set by the transmission speed setting switch is turned on.				625K	ON: Transmission speed is set at "625 Mbps"	2.5M	ON: Transmission speed is set at "2.5 Mbps"	5M	ON: Transmission speed is set at "5 kbps"	10M	ON: Transmission speed is set at "10 Mbps"	TEST	TEST	ON: Offline test in progress	Refer to Sections 7.4, 7.8 and 7.9.		Refer to Section 7.4.		S0	(Not used)	S1	S2	SD	ON: Sending data	On	Off	On	Off	RD	ON: Receiving data	On	Off	On	Off
				LED name	Description	LED display status																																																																																																																														
						Master station (Standby master station)		Local station (Standby master station)																																																																																																																												
		When normal	When error			When normal	When error																																																																																																																													
		RUN	ON: Module is normal. OFF: There is a watchdog timer error.	On	Off	On	Off																																																																																																																													
		ERR.	Indicates the communication status with the station set in the parameter. ON: Communication error at all stations. Flashing: Communication faulty station exists.	Off	On or flashing	Off	On or flashing																																																																																																																													
		MST	ON: Set as master station.	On	—	Off	—																																																																																																																													
		S MST	ON: Set as a standby master station (planned in the future).	(On)	—	(On)	—																																																																																																																													
		LOCAL	ON: Set as a local station.	Off	—	On	—																																																																																																																													
		CPU R/W	ON: Communicating with PC CPU. (FROM/TO)	On	Off	On	Off																																																																																																																													
		ERROR	SW	ON: Switch setting error	Off	On	Off	On																																																																																																																												
			M/S	ON: Exist already master station on the same line. Flashing: Occupied station count overlapping (With the exception of the first station number overlapping)	Off	On or flashing	—	—																																																																																																																												
			PRM	ON: Parameter setting error.	Off	On	—	—																																																																																																																												
			TIME	ON: Open cable or no response from all stations due to the influence of noise on the transmission path.	Off	On	—	—																																																																																																																												
			LINE	ON: Cable is disconnected. Or noise, etc. is occurring at the transmission route.	Off	On	Off	On																																																																																																																												
		L RUN	ON: Data link in progress (host)	On	Off	On	Off																																																																																																																													
		L ERR.	ON: Communication error (host) Flashing at regular intervals : Setting of any of the switches and like 2 to 5 was changed while power was on. Flashing at irregular intervals : Terminating resistor not fitted, or module and/or CC-Link dedicated cable affected by noise.	Off	On or flashing	Off	On or flashing																																																																																																																													
		BRATE	156K	ON: Transmission speed is set at "156 Mbps"	④ Transmission speed set by the transmission speed setting switch is turned on.																																																																																																																															
			625K	ON: Transmission speed is set at "625 Mbps"																																																																																																																																
			2.5M	ON: Transmission speed is set at "2.5 Mbps"																																																																																																																																
			5M	ON: Transmission speed is set at "5 kbps"																																																																																																																																
			10M	ON: Transmission speed is set at "10 Mbps"																																																																																																																																
		TEST	TEST	ON: Offline test in progress	Refer to Sections 7.4, 7.8 and 7.9.		Refer to Section 7.4.																																																																																																																													
			S0	(Not used)																																																																																																																																
			S1																																																																																																																																	
			S2																																																																																																																																	
		SD	ON: Sending data	On	Off	On	Off																																																																																																																													
RD	ON: Receiving data	On	Off	On	Off																																																																																																																															

AJ61BT11

RUNERR.MST

S MSTLOCAL

CPU R / W

156K625K2. 5M5M10M

B

R

A

T

E

ERROR

SWM / S

PRM

TIME

LINE

TEST

S0

S1

S2

L RUN

L ERR.

SD

RD

A1SJ61BT11

RUNERR.MST

S MSTLOCAL

CPU R / W

SWM / S

PRM

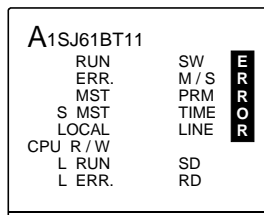
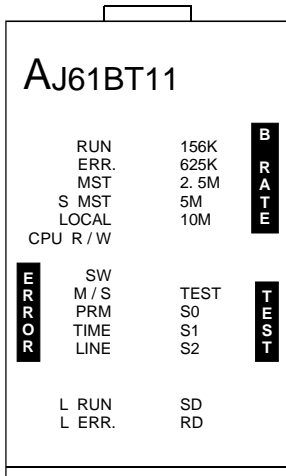
TIME

LINE

ERROR

SD

RD



No.	Name	Description																																																																																							
②	<div>Station number setting switch AJ61BT11</div> <div><div>STATION NO. x10</div><div><div>0 1 2 3 4 5 6 7 8 9</div><div>0 1 2 3 4 5 6 7 8 9</div></div><div>x1</div><div><div>0 1 2 3 4 5 6 7 8 9</div><div>0 1 2 3 4 5 6 7 8 9</div></div></div> <div>A1SJ61BT11</div> <div><div>STATION NO.</div><div>x10</div><div><div>0 1 2 3 4 5 6 7 8 9</div><div>0 1 2 3 4 5 6 7 8 9</div></div><div>x1</div><div><div>0 1 2 3 4 5 6 7 8 9</div><div>0 1 2 3 4 5 6 7 8 9</div></div></div>	<div>Set the module's station number (setting at shipment: 0)</div> <div><range></div> <div><div>In remote net mode</div><div>Master station : 0</div><div>Local station : 1 to 64</div><div>Standby master station : 1 to 64</div><div>The "SW" and "L ERR." LEDs are turned on when a value other than 0 to 64 is set.</div></div> <div><div>In remote I/O net mode</div><div>Master station : 1 to 64 (Set last remote I/O station's station number)</div><div>The "PLM" LED is turned on when "0" is set.</div></div>																																																																																							
③	<div>Mode setting switch AJ61BT11</div> <div><div>MODE</div><div>0 : ONLINE (A. R.) 1 : ONLINE(RIM) 2 : OFFLINE</div><div><div>0 1 2 3 4 5 6 7 8 9 A B C D E F</div><div>0 1 2 3 4 5 6 7 8 9 A B C D E F</div></div></div> <div>A1SJ61BT11</div> <div><div>MODE</div><div><div>0 1 2 3 4 5 6 7 8 9 A B C D E F</div><div>0 1 2 3 4 5 6 7 8 9 A B C D E F</div></div></div> <div>* 1</div>	<div>Sets the module operation status. (setting at shipment: 0)</div> <table><tr><th rowspan="2">Number</th><th rowspan="2">Name</th><th rowspan="2">Description</th><th colspan="2">Setting</th></tr><tr><th>Master station</th><th>Local station</th></tr><tr><td>0</td><td>Online (remote net mode)</td><td>Used when data link is performed in remote net mode</td><td>Enabled</td><td>Enabled</td></tr><tr><td>1</td><td>Online (remote I/O net mode)</td><td>Used when data link is performed in remote I/O net mode</td><td>Enabled</td><td>Disabled</td></tr><tr><td>2</td><td>Offline</td><td>Data-link disconnection status</td><td>Enabled</td><td>Enabled</td></tr><tr><td>3</td><td>Line Test 1</td><td>Refer to Section 7.7.1.</td><td>Enabled</td><td>Disabled</td></tr><tr><td>4</td><td>Line Test 2</td><td>Refer to Section 7.7.2.</td><td>Enabled</td><td>Disabled</td></tr><tr><td>5</td><td>Parameter verification test</td><td>Refer to Section 7.8.</td><td>Enabled</td><td>Disabled</td></tr><tr><td>6</td><td>Hardware test</td><td>Refer to Section 7.4.</td><td>Enabled</td><td>Enabled</td></tr><tr><td>7</td><td>(Unusable)</td><td>Setting error (the "SW" LED on)</td><td>—</td><td>—</td></tr><tr><td>8</td><td>(Unusable)</td><td>—</td><td>—</td><td>—</td></tr><tr><td>9</td><td>(Unusable)</td><td>—</td><td>—</td><td>—</td></tr><tr><td>A</td><td>(Unusable)</td><td>—</td><td>—</td><td>—</td></tr><tr><td>B</td><td>(Unusable)</td><td>Setting error (the "SW" LED on)</td><td>—</td><td>—</td></tr><tr><td>C</td><td>(Unusable)</td><td>Setting error (the "SW" LED on)</td><td>—</td><td>—</td></tr><tr><td>D</td><td>(Unusable)</td><td>Setting error (the "SW" LED on)</td><td>—</td><td>—</td></tr><tr><td>E</td><td>(Unusable)</td><td>Setting error (the "SW" LED on)</td><td>—</td><td>—</td></tr><tr><td>F</td><td>(Unusable)</td><td>Setting error (the "SW" LED on)</td><td>—</td><td>—</td></tr></table>	Number	Name	Description	Setting		Master station	Local station	0	Online (remote net mode)	Used when data link is performed in remote net mode	Enabled	Enabled	1	Online (remote I/O net mode)	Used when data link is performed in remote I/O net mode	Enabled	Disabled	2	Offline	Data-link disconnection status	Enabled	Enabled	3	Line Test 1	Refer to Section 7.7.1.	Enabled	Disabled	4	Line Test 2	Refer to Section 7.7.2.	Enabled	Disabled	5	Parameter verification test	Refer to Section 7.8.	Enabled	Disabled	6	Hardware test	Refer to Section 7.4.	Enabled	Enabled	7	(Unusable)	Setting error (the "SW" LED on)	—	—	8	(Unusable)	—	—	—	9	(Unusable)	—	—	—	A	(Unusable)	—	—	—	B	(Unusable)	Setting error (the "SW" LED on)	—	—	C	(Unusable)	Setting error (the "SW" LED on)	—	—	D	(Unusable)	Setting error (the "SW" LED on)	—	—	E	(Unusable)	Setting error (the "SW" LED on)	—	—	F	(Unusable)	Setting error (the "SW" LED on)	—	—
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④	<div>Transmission speed setting switch AJ61BT11</div> <div><div>B RATE</div><div><div>0 1 2 3 4</div><div>156K 625K 2.5M 5M 10M</div></div><div><div>0 1 2 3 4</div><div>156K 625K 2.5M 5M 10M</div></div></div> <div>A1SJ61BT11</div> <div><div>B RATE</div><div><div>0 1 2 3 4</div><div>156K 625K 2.5M 5M 10M</div></div></div>	<div>Sets the module's transmission speed (setting at shipment: 0)</div> <table><tr><th>Number</th><th>Setting details</th></tr><tr><td>0</td><td>156kbps</td></tr><tr><td>1</td><td>625kbps</td></tr><tr><td>2</td><td>2.5Mbps</td></tr><tr><td>3</td><td>5Mbps</td></tr><tr><td>4</td><td>10Mbps</td></tr><tr><td>5</td><td>Setting error (the "SW" "L ERR." LED on)</td></tr><tr><td>6</td><td>Setting error (the "SW" "L ERR." LED on)</td></tr><tr><td>7</td><td>Setting error (the "SW" "L ERR." LED on)</td></tr><tr><td>8</td><td>Setting error (the "SW" "L ERR." LED on)</td></tr><tr><td>9</td><td>Setting error (the "SW" "L ERR." LED on)</td></tr></table>	Number	Setting details	0	156kbps	1	625kbps	2	2.5Mbps	3	5Mbps	4	10Mbps	5	Setting error (the "SW" "L ERR." LED on)	6	Setting error (the "SW" "L ERR." LED on)	7	Setting error (the "SW" "L ERR." LED on)	8	Setting error (the "SW" "L ERR." LED on)	9	Setting error (the "SW" "L ERR." LED on)																																																																	
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⑤	<div>Condition setting switch AJ61BT11</div> <div><table><tr><td>OFF</td><td>ON</td></tr><tr><td>M / L</td><td>S MST</td></tr><tr><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td></tr><tr><td>CLEAR</td><td>HOLD</td></tr><tr><td>1/2</td><td>3/4</td></tr><tr><td>1/4</td><td>2/3</td></tr><tr><td>—</td><td>—</td></tr><tr><td>ISFM</td><td>SFM</td></tr></table><div>→ ON <table><tr><td><input type="checkbox"/></td><td>SW 1</td></tr><tr><td><input type="checkbox"/></td><td>2</td></tr><tr><td><input type="checkbox"/></td><td>3</td></tr><tr><td><input type="checkbox"/></td><td>4</td></tr><tr><td><input type="checkbox"/></td><td>5</td></tr><tr><td><input type="checkbox"/></td><td>6</td></tr><tr><td><input type="checkbox"/></td><td>7</td></tr><tr><td><input type="checkbox"/></td><td>8</td></tr></table></div></div> <div>A1SJ61BT11</div> <div><table><tr><td>→ <input type="checkbox"/></td><td>ON</td></tr><tr><td>↖ <input type="checkbox"/></td><td>2</td></tr><tr><td>ω <input type="checkbox"/></td><td>3</td></tr><tr><td>↗ <input type="checkbox"/></td><td>4</td></tr><tr><td>⇨ <input type="checkbox"/></td><td>5</td></tr><tr><td>⇩ <input type="checkbox"/></td><td>6</td></tr><tr><td>⇧ <input type="checkbox"/></td><td>7</td></tr><tr><td>⇦ <input type="checkbox"/></td><td>8</td></tr></table><div>SW OFF ON <table><tr><td>1</td><td>M / L</td><td>S. M</td></tr><tr><td>2</td><td>—</td><td>—</td></tr><tr><td>3</td><td>—</td><td>—</td></tr><tr><td>4</td><td>CLR</td><td>HLD</td></tr><tr><td>5</td><td>1/2</td><td>3/4</td></tr><tr><td>6</td><td>1/4</td><td>2/3</td></tr><tr><td>7</td><td>—</td><td>—</td></tr><tr><td>8</td><td>ISM</td><td>SFM</td></tr></table></div></div>	OFF	ON	M / L	S MST	—	—	—	—	CLEAR	HOLD	1/2	3/4	1/4	2/3	—	—	ISFM	SFM	<input type="checkbox"/>	SW 1	<input type="checkbox"/>	2	<input type="checkbox"/>	3	<input type="checkbox"/>	4	<input type="checkbox"/>	5	<input type="checkbox"/>	6	<input type="checkbox"/>	7	<input type="checkbox"/>	8	→ <input type="checkbox"/>	ON	↖ <input type="checkbox"/>	2	ω <input type="checkbox"/>	3	↗ <input type="checkbox"/>	4	⇨ <input type="checkbox"/>	5	⇩ <input type="checkbox"/>	6	⇧ <input type="checkbox"/>	7	⇦ <input type="checkbox"/>	8	1	M / L	S. M	2	—	—	3	—	—	4	CLR	HLD	5	1/2	3/4	6	1/4	2/3	7	—	—	8	ISM	SFM	<div>Sets the operation condition (setting at shipment: SW1 to 7 are OFF, SW8 is ON)</div> <table><tr><th rowspan="2">Number</th><th rowspan="2">Setting contents</th><th rowspan="2">Description</th><th colspan="2">Setting valid/not valid</th></tr><tr><th>Master station (Standby master station)</th><th>Local station (Standby master station)</th></tr><tr><td>SW1</td><td>Station type</td><td>OFF : Master station/local station ON : Standby master station</td><td>(Valid)</td><td>(Valid)</td></tr><tr><td>SW2</td><td>(Unusable)</td><td>Always off</td><td>—</td><td>—</td></tr><tr><td>SW3</td><td>(Unusable)</td><td>Always off</td><td>—</td><td>—</td></tr><tr><td>SW4</td><td>Input data status of the data link error station</td><td>OFF : Clear ON : Hold</td><td>Valid</td><td>Valid</td></tr><tr><td>SW5 SW6</td><td>Number of occupied station</td><td><table><tr><td>Number of occupied station</td><td>SW5</td><td>SW6</td></tr><tr><td>1 station</td><td>OFF</td><td>OFF</td></tr><tr><td>2 stations ※ 1</td><td>OFF</td><td>ON</td></tr><tr><td>3 stations ※ 1</td><td>ON</td><td>ON</td></tr><tr><td>4 stations</td><td>ON</td><td>OFF</td></tr></table></td><td>Invalid</td><td>Valid</td></tr><tr><td>SW7</td><td>(Unusable)</td><td>Always OFF</td><td>—</td><td>—</td></tr><tr><td>SW8</td><td>Module mode</td><td>OFF : Intelligent mode ON : I/O mode</td><td>Valid</td><td>Valid</td></tr></table>	Number	Setting contents	Description	Setting valid/not valid		Master station (Standby master station)	Local station (Standby master station)	SW1	Station type	OFF : Master station/local station ON : Standby master station	(Valid)	(Valid)	SW2	(Unusable)	Always off	—	—	SW3	(Unusable)	Always off	—	—	SW4	Input data status of the data link error station	OFF : Clear ON : Hold	Valid	Valid	SW5 SW6	Number of occupied station	<table><tr><td>Number of occupied station</td><td>SW5</td><td>SW6</td></tr><tr><td>1 station</td><td>OFF</td><td>OFF</td></tr><tr><td>2 stations ※ 1</td><td>OFF</td><td>ON</td></tr><tr><td>3 stations ※ 1</td><td>ON</td><td>ON</td></tr><tr><td>4 stations</td><td>ON</td><td>OFF</td></tr></table>	Number of occupied station	SW5	SW6	1 station	OFF	OFF	2 stations ※ 1	OFF	ON	3 stations ※ 1	ON	ON	4 stations	ON	OFF	Invalid	Valid	SW7	(Unusable)	Always OFF	—	—	SW8	Module mode	OFF : Intelligent mode ON : I/O mode	Valid	Valid
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⑥	<div>Terminal block</div> <div><table><tr><td>NC</td><td></td></tr><tr><td>DA</td><td>1</td></tr><tr><td>NC</td><td>2</td></tr><tr><td>DB</td><td>3</td></tr><tr><td>NC</td><td>4</td></tr><tr><td>DG</td><td>5</td></tr><tr><td>NC</td><td>6</td></tr><tr><td>SLD</td><td>7</td></tr><tr><td>NC</td><td>8</td></tr><tr><td>(FG)</td><td>9</td></tr><tr><td></td><td>10</td></tr></table></div>	NC		DA	1	NC	2	DB	3	NC	4	DG	5	NC	6	SLD	7	NC	8	(FG)	9		10	<div>Connect the CC-Link dedicated cable for data link. Refer to Section 7.5 for how to connect the cables. However, the following terminals are connected in the inside of the module.</div> <div>SLD (terminal No.8) — FG (terminal No.10) NC (terminal No.7) — NC (terminal No.9)</div>																																																																																																													
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* 1 : The AJ61BT11 of hardware version F or later and the A1SJ61BT11 of hardware version G or later are compatible with this setting.

For other than the above, only SW5 is used to set the number of occupied stations.

OFF : 1 station occupied

ON : 4 stations occupied

Keep SW6 OFF as it is unusable.

POINT

- (1) When the module is operated in the synchronous mode, the "L RUN" LED may dimly illuminate.
- (2) For switches ③ to ⑤, the setting details when the module power is turned on become valid.
When the setting details are changed while the module power is on, either turn off → on the module power, or reset the PC CPU.

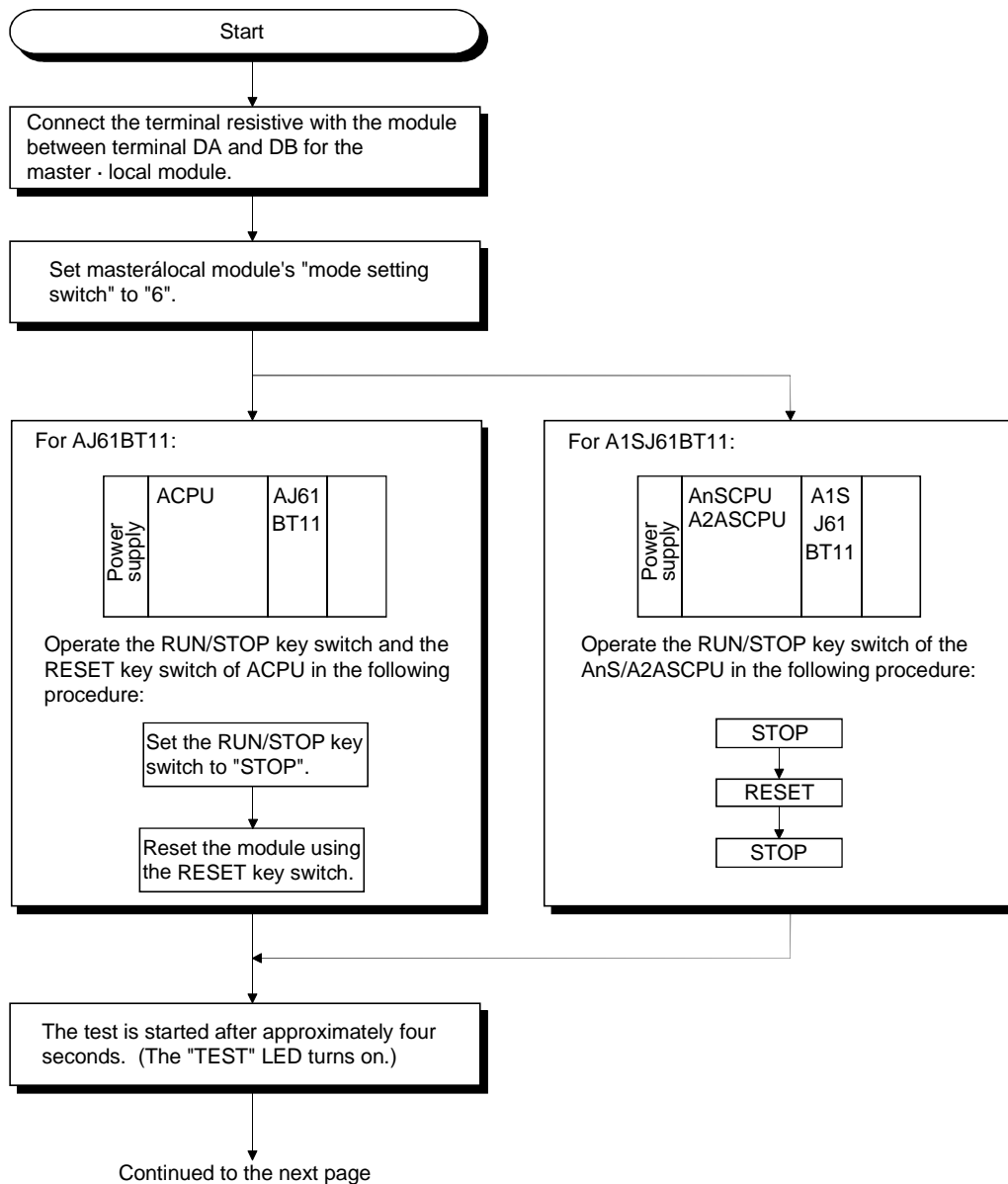
Important

Do not use station number 64 in a system where the waiting master station exists.
When it is used, the station number 64 will not communicate correctly.

7.4 Checking Module Condition (Hardware Test)

The hardware test checks if the module alone operates normally.
Always perform a hardware test before configuring the system.

Perform a hardware test by following the procedure below:

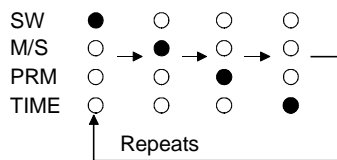


Continued from the previous page

The test results are displayd on the "LEDs" of master-local module.

[When normal]

The LEDs are turned on in the following order:
"SW"→"M/S"→"PRM"→"TIME".



[When error]

The error description for each check item is shown below.
Replace the module if an error occurs.

Check item	LED item	Description
Self-loopback check	"SW" on	Module error
ROM check	"M/S" on	ROM error
RAM check	"PRM" on	RAM error

The "RUN" LED turns off.

End

7.5 Module Wiring with CC-Link Dedicated Cable

The connection method of the CC-Link dedicated cable for the master module, local module, and remote module Intelligent device module are described.

- (1) Connections can be made regardless of the station numbers.
- (2) Always connect "terminal resistors" supplied with the module to the modules at both ends and between "DA" and "DB."
- (3) The master module can be connected besides to the ends.
- (4) T-shaped branch connection and star connection are not possible.
- (5) The connection method is shown below.

Important

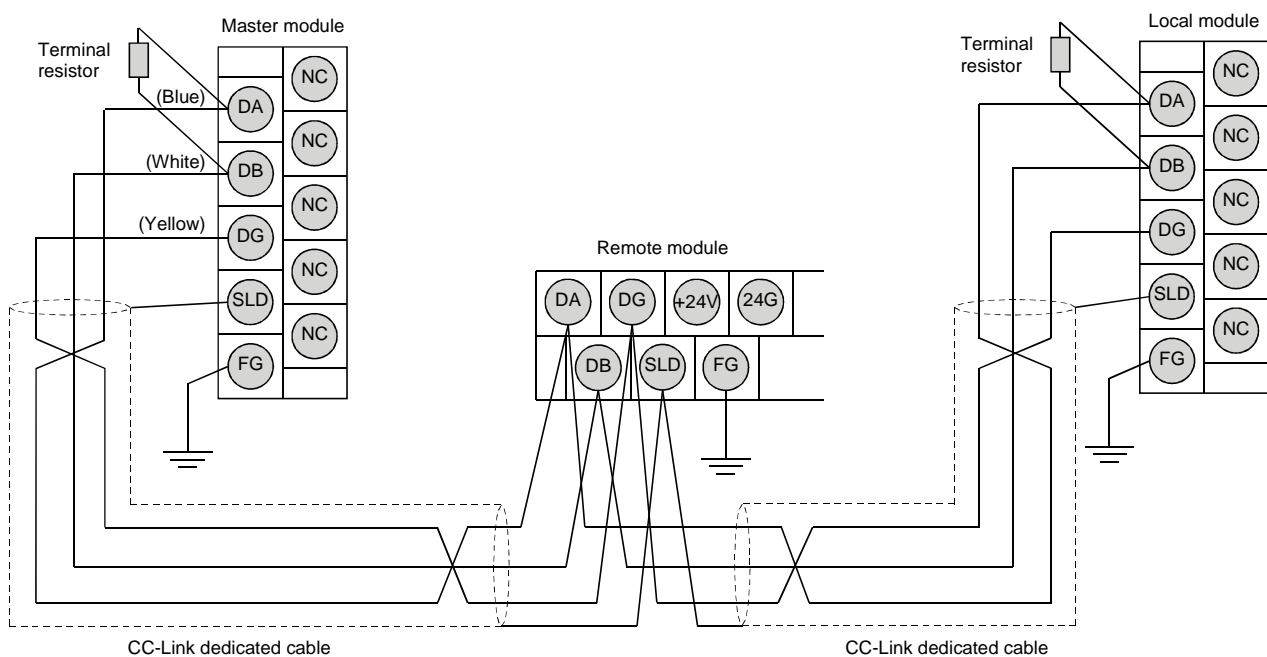
Be sure to turn off the power supply to the corresponding station before installing/removing the terminal block.

If the installation/removal of the terminal block is performed without turning off the power supply to the corresponding station, correct data transmission is not guaranteed.

POINT

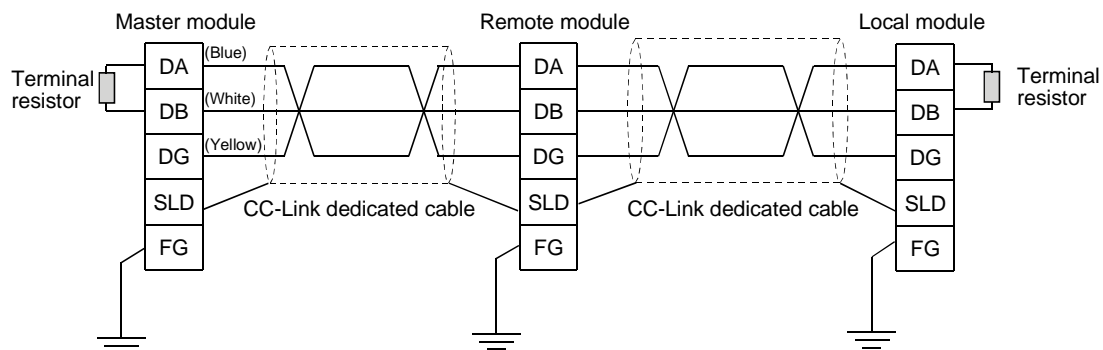
The shielded cable of the CC-Link dedicated cable should be connected to "SLD" in each module, and both ends should be grounded through "FG".

Further, SLD and FG are connected to each other in the module.



[Simplified diagram]

The simplified diagram of the connection described in the previous page is shown below:

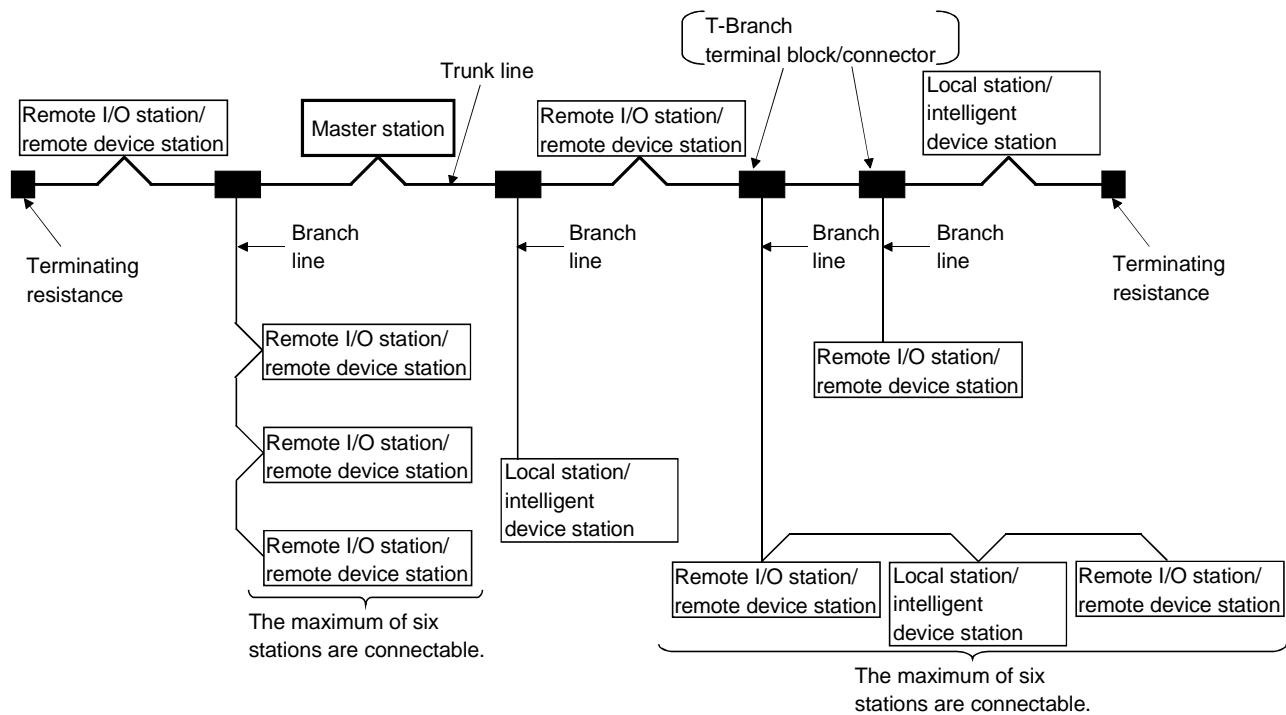


7.6 T-Branch Connection with the CC-Link Dedicated Cable

The T-Branch connection method with CC-Link dedicated cable is described below.

7.6.1 T-Branch system configuration

The system configuration in the connection of T-Branch is as shown below.



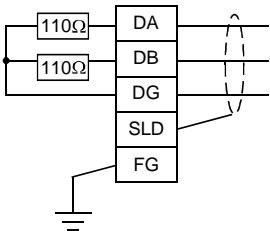
*The number of trunk and branch lines vary according to the line length for each branch line and the total length of branch lines.

7.6.2 T-Branch communication specifications list

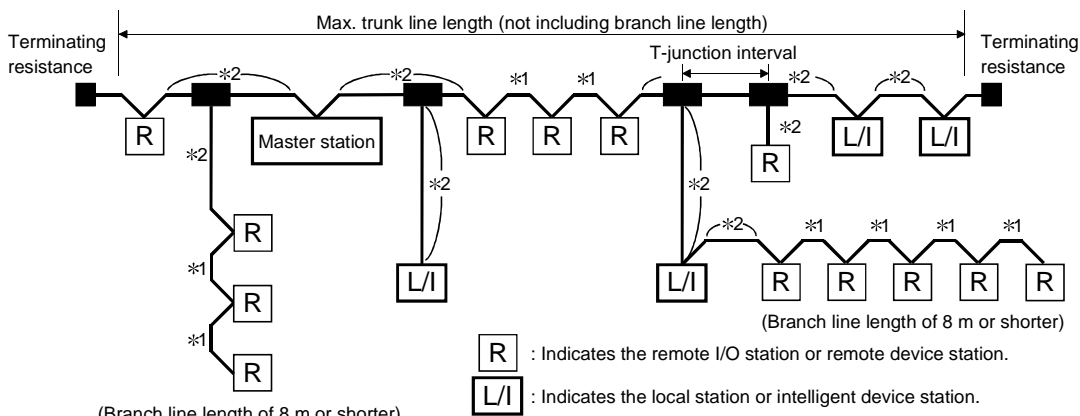
The communication specifications in T-junction connection are described below.

Refer to Section 3.2 for the communication specifications not listed in the table below.

Item	Specification		Remark
Transmission speed	625kbps	156kbps	10 M bps, 5 M pbs, and 2.5 Mbps unable
Max. trunk line length	100m	500m	Indicates the cable length between terminating resistances. Not include the T-junction cable length (branch line length).
Max. branch line length	8m		Indicates the overall cable length for each junction.
Total branch line length	50m	200m	Indicates the total length of all branch cables.
Max. number of stations connected to branch lines	6/branch		The total number of connectable stations varies according to CC-Link specification.
Connection cable	CC-Link dedicated cable Version 1.10 compatible CC-Link dedicated cable		<ul style="list-style-type: none"> • CC-Link dedicated advanced cable unusable • Mixing of different brands of CC-Link dedicated cables is not allowed. • Mixing of different brands of Ver. 1.10 compatible CC-Link dedicated cables is allowed.

Item	Specification	Remark		
Terminating resistance (connection method)	<p>When the hardware version of the master module is as follows:</p> <p>AJ61BT11 : Hardware version C or later AJ61QBT11 : Hardware version C or later AISJ61BT11 : Hardware version D or later AISJ61QBT11 : Hardware version D or later</p> <p>110 Ω ± 5 %, 1/2 W × 4 (connect across DA-DG and DB-DG)Both ends [connection]</p> 	<ul style="list-style-type: none">• Use commercial terminating resistances of 110 Ω ± 5 % and 1/2 W. [Resistance model name] (Example: ERDS1TJ111 Matsushita Electronic Components Co., Ltd.)• Use of the resistances of 110 Ω and 130 Ω furnished with the master and local modules is prohibited.		
	<p>When the hardware version of the master module is other than those stated above, connect the resistance of 110 Ω furnished with the master module. Refer to Section 7.5 for connection method.</p>	<ul style="list-style-type: none">• The method to connect the terminating resistance across DA-DG and DB-DG is also acceptable.		
T-Branch terminal block/connector	<ul style="list-style-type: none">• Terminal block..... Commercial terminal block• Connector Connector NECA4202 for FA sensor (ICE947-5-2) or equivalent is recommended. (NECA: Nippon Electric Control Equipment Industries Association)	<ul style="list-style-type: none">• If possible, do not remove the cover of the cable on the trunk line side.		
Max. trunk line length, T-junction interval, and station-to-station cable length	CC-Link dedicated cable/ Version 1.10 compatible CC-Link dedicated cable (terminating resistance of 110 Ω is used)			
	Transmission speed	Max. trunk line length	T-junction interval	Station-to-station cable length for remote I/O stations or remote device stations * 1
	625kbps	100m	Limitless	30 cm or longer
	156kbps	500m		
				Station-to-station cable length for master local station or intelligent device station and its front and rear stations * 2
			1 m or longer (* 1)/ 2 m or longer (* 2)	

* 1: 1 m or longer when the system is configured only with the remote I/O stations and remote device stations.
* 2: 2 m or longer when the system is configured only with the local stations and intelligent device stations.



(Branch line length of 8 m or shorter)

(Branch line length of 8 m or shorter)

R : Indicates the remote I/O station or remote device station.
L/I : Indicates the local station or intelligent device station.

7.7 Switch Settings

The setting method for each switch on the module is described.

7.7.1 Station number setting (master station, local station and remote station)

The station number setting method is described for the master station, local station and remote station.

POINT

Set the data so that it matches the setting in the "station information (address 20H to 5FH)" in the parameter information area in the buffer memory.

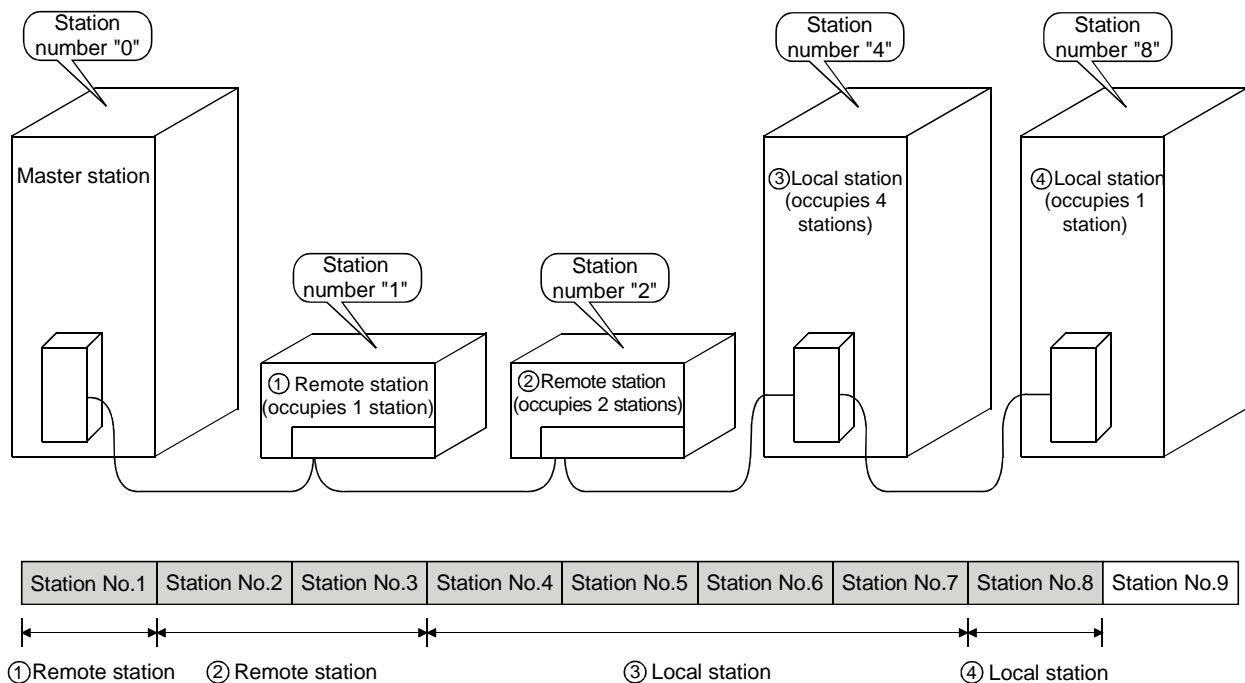
(1) Set the station number to be consecutive.

The station number can be set regardless of the connection order.

Also, for modules that occupy more than 2 stations, set the first station number.

Station type	Station number to set
Master station	0 (Fix)
Local station	1 to 64
Remote station	1 to 64

[Setting example] When setting the station numbers in the connection order:

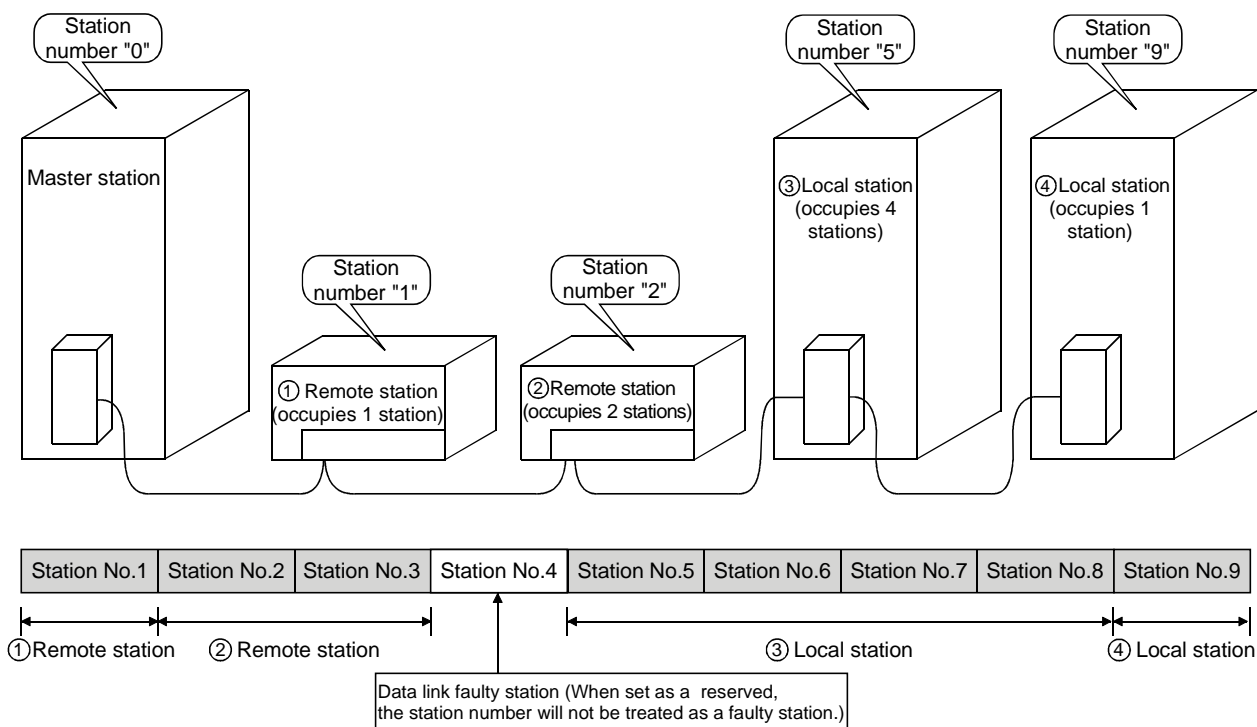


(2) Do not skip station numbers.

The skipped station number is treated as a "data-link faulty station (link special register SW0080 to 0083: can be checked with buffer memory address 680H to 683H)".

However, by setting as a reserved station, the station number will not be treated as a data-link faulty station.

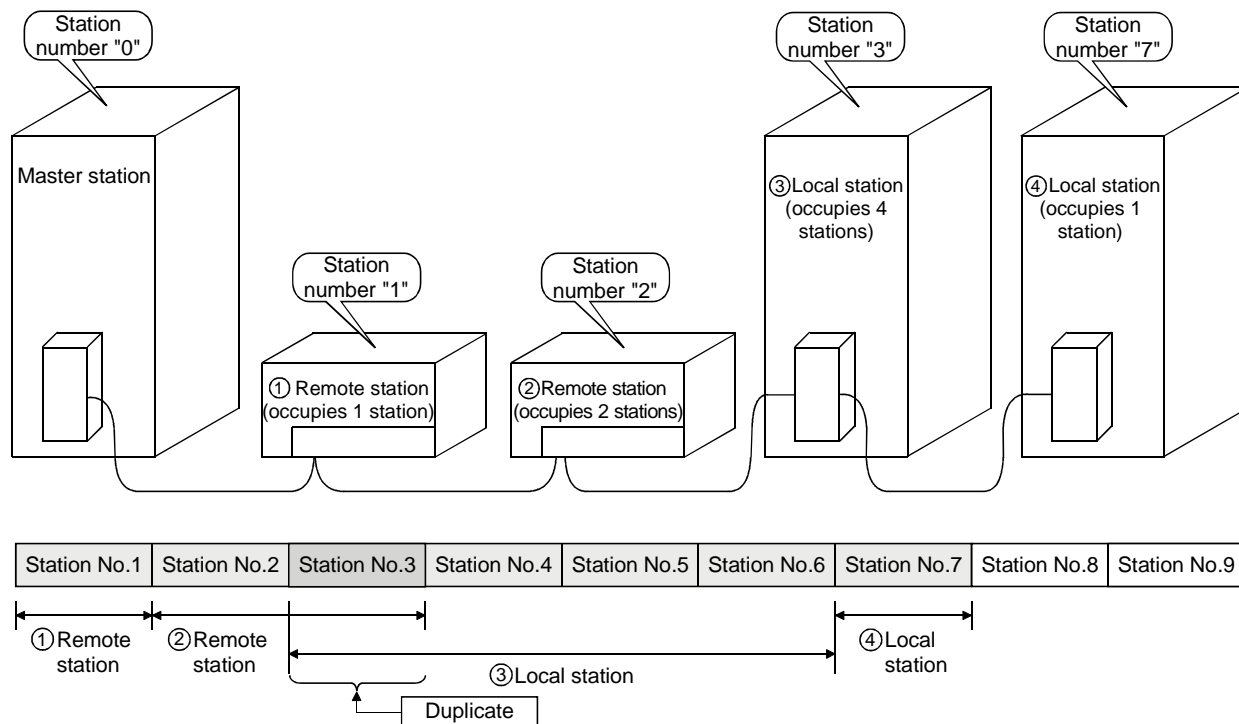
[Setting example] When a station number is skipped:



(3) There cannot be duplicate station numbers.

If there are duplicate numbers, it results in Loading status error. (Error code is stored in SW0069.)

[Setting example] When a station number is duplicated:



7.7.2 Mode setting

When performing data link, "0 (online)" should be set normally.

7.7.3 Transmission speed setting

The transmission speed setting differs depending on the overall distance.
Refer to Section 3.2.1, 3.2.2 for details.

POINT

Set the same transmission speed for all of master, local and remote stations.
When the setting is different even at just one station,, normal data link cannot be performed.

7.7.4 Condition setting

The setting method of the condition setting switch (DIP switch) is shown in Table 7.2.

Table 7.2 Condition setting

Number	Description	Switch status			Setting	
					Master station	Local station
SW1	Station type	OFF : Master/local station ON : Standby master station			OFF (station number 0)	OFF (station number 1 to 64)
SW2	(Unusable)	—			Always OFF	
SW3	(Unusable)	—			Always OFF	
SW4	Input data status of the data link faulty station	OFF : Clear ON : Hold			OFF	When setting all input data from the data-link faulty station to all off. (Refer to Section 4.9.)
					ON	When keeping the input data from the data-link faulty station in the status right before the error. (Refer to Section 4.9.)
SW5 SW6	Number of occupied stations	Number of occupied stations	SW5	SW6	Setting not necessary (OFF)	—
		1 stations	OFF	OFF		<ul style="list-style-type: none"> • Remote input RX : 32 points • Remote output RY : 32 points • Remote register RWW : 4 points • Remote register RWR : 4 points
		2 stations * 1	OFF	ON		<ul style="list-style-type: none"> • Remote input RX : 64 points • Remote output RY : 64 points • Remote register RWW : 8 points • Remote register RWR : 8 points
		3 stations * 1	ON	ON		<ul style="list-style-type: none"> • Remote input RX : 96 points • Remote output RY : 96 points • Remote register RWW : 12 points • Remote register RWR : 12 points
		4 stations	ON	OFF		<ul style="list-style-type: none"> • Remote input RX : 128 points • Remote output RY : 128 points • Remote register RWW : 16 points • Remote register RWR : 16 points
SW7	(Unusable)	—			Always OFF	
SW8 * 2	Module mode	OFF : Intelligent mode ON : I/O mode			When intelligent mode : OFF When I/O mode : ON	

* 1 : The AJ61BT11 of hardware version F or later and the A1SJ61BT11 of hardware version G or later are compatible with this setting.

For other than the above, only SW5 is used to set the number of occupied stations.

OFF : 1 station occupied

ON : 4 stations occupied

Keep SW6 OFF as it is unusable.

* 2 : Choose the intelligent mode when:

(1) Intelligent device station is connected.

To check whether the module connected is an intelligent device station or not, refer to the user's manual of the corresponding module, e.g. AJ65BT-R2, AJ65BT-G4, AJ65BT-D75P2-S3, etc.; or

(2) Transient transmission is used at a local station or the like.

7.8 Checking the Connection Condition (Line Test)

The Line Test is performed after all modules have been wired with CC-Line dedicated cable to check if the connection is correctly established to perform data link with each remote station, intelligent device station, local station, and standby master station.

POINT

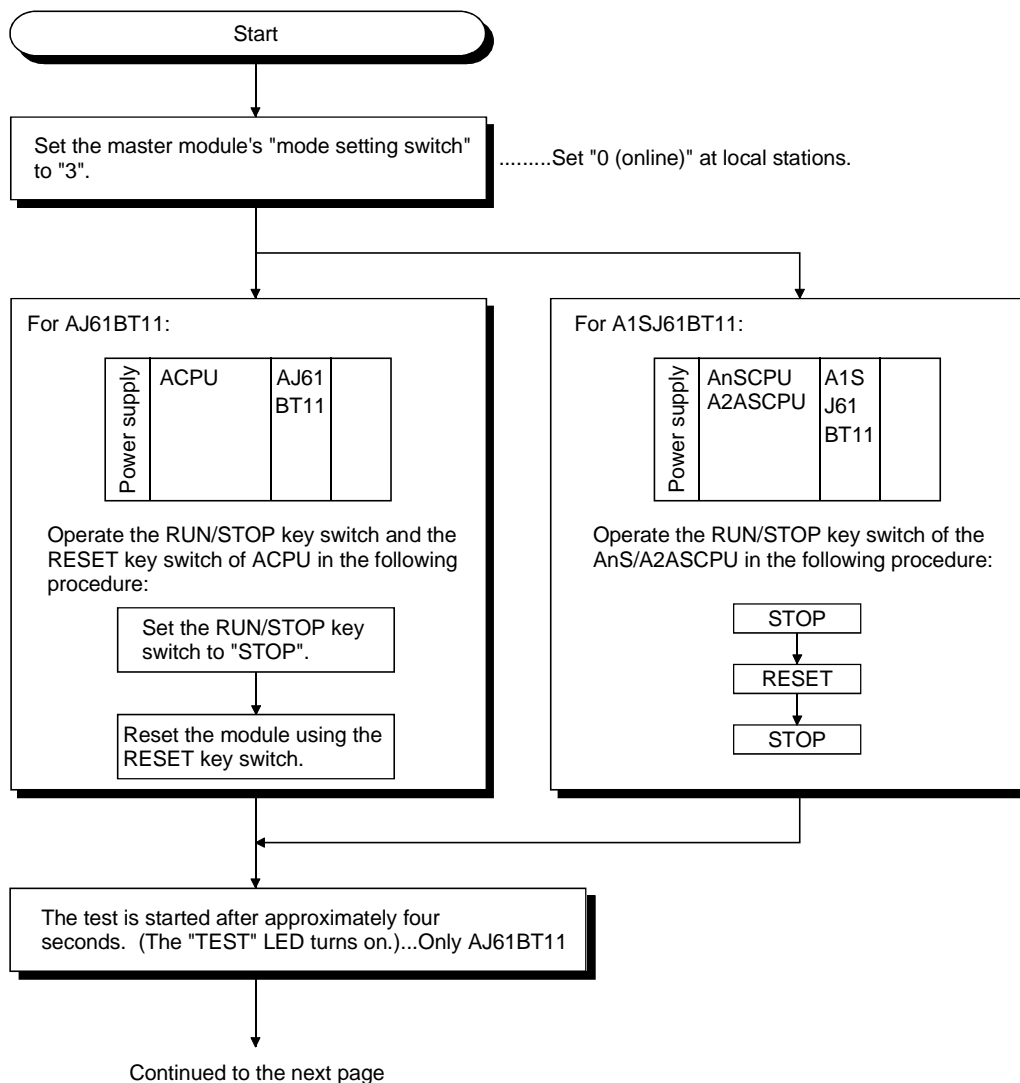
Line Test 2 is performed when an error has occurred in Line Test 1.

Therefore, there is no need to perform Line Test 2 if no error was detected in Line Test 1.

7.8.1 Checking connection and communication status with remote station/local station (Line Test 1)

Confirms if data link can be performed normally with all (64 stations) the remote and local stations.

Perform Line Test by following the procedure below:



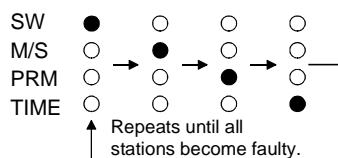
Continued from the previous page

The test results are displayed on the "LEDs" of master module.

[When at least one station is communicating normally]

The LEDs are turned on in the following order: "SW"→"M/S"→"PRM"→"TIME".

The test result is stored in SW00B4 to B7. However, the test is performed for 64 stations, so ignore the bits for the unconnected stations.



LED on	Cause	Error code storage area
PRM	• All stations have error, or cable is disconnected.	SW00B8
none	• Test cannot start. (Cable is disconnected before the test, or power is off at all stations.)	—

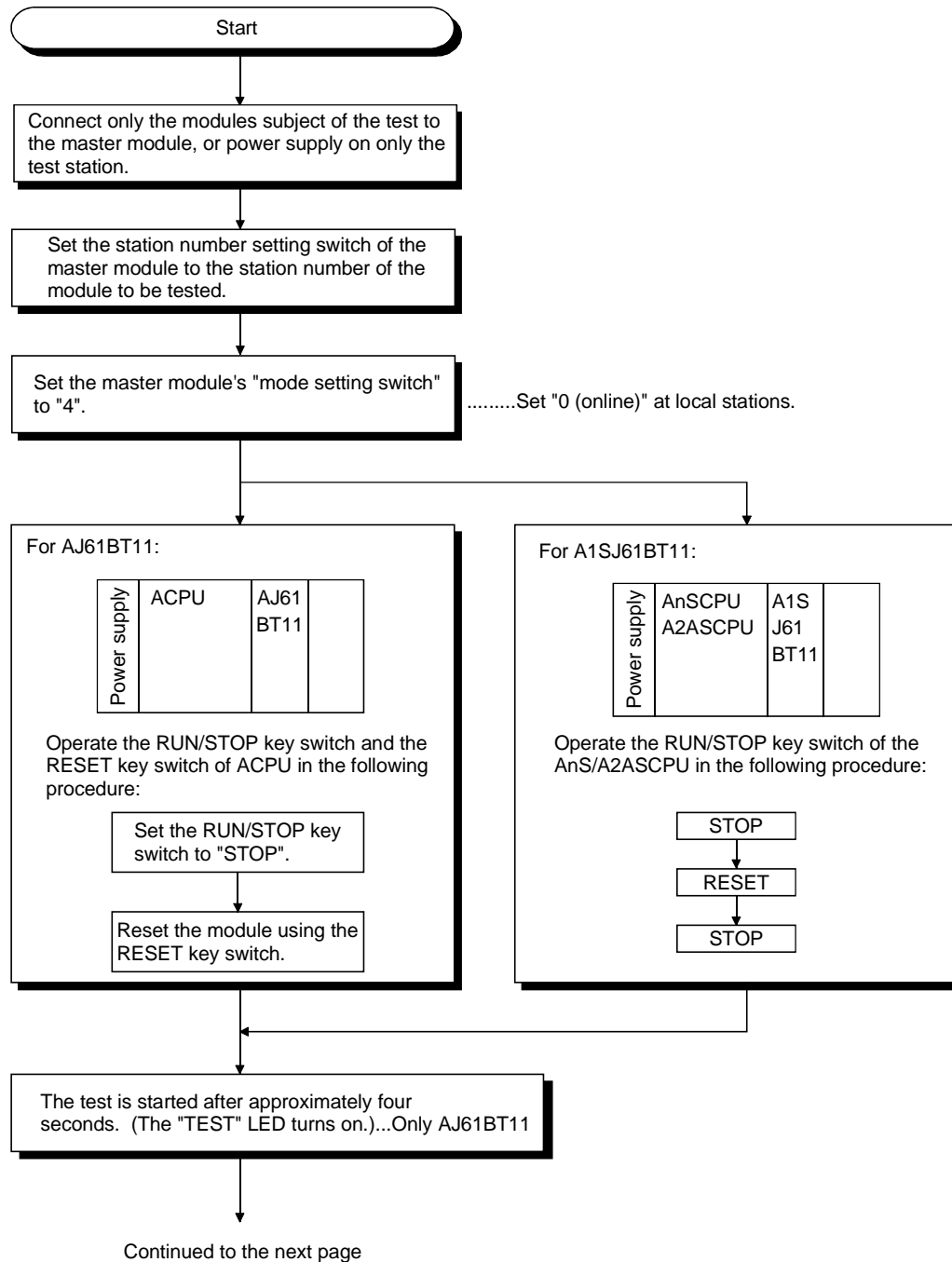
End

7.8.2 Checking connection and communication status with specific remote station/local station (Line Test 2)

Confirms if data link can be performed normally with specific remote and local stations.

There is no need to set parameters.

Perform Line Test 2 by following the procedure below:



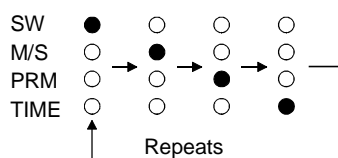
Continued from the previous page

The test results are displayed on the "LEDs" of master module.

[When normal]

The LEDs are turned on in the following order: "SW" → "M/S" → "PRM" → "TIME".

It is judged as normal when this repeats five times or more.



[When error]

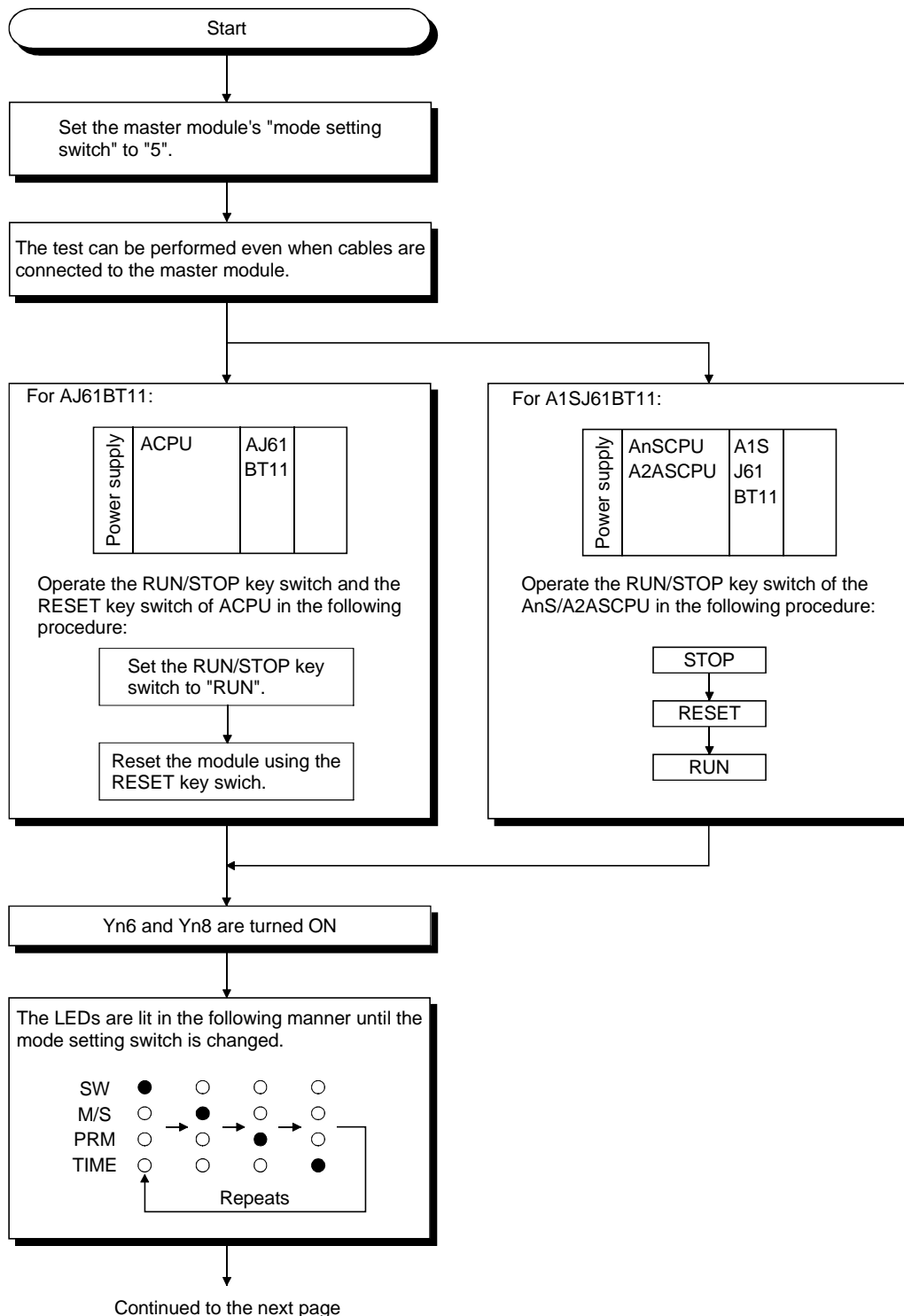
LED on	Cause	Error code storage area
PRM	• Cable is disconnected, or the corresponding station has error. • Test transmission text is corrupt.	SW00B8
none	• Test cannot start. (Cable is disconnected before the test, or power is off at all stations.)	—

End

7.9 Checking Parameters (Parameter Confirmation Test)

Contents of the parameters registered in the master module's E²PROM can be confirmed.

Perform the test by following the procedure below:



Continued from the previous page



The test results are displayed on the "LEDs" of master module.

By switching the mode setting switch, the parameter content corresponding to each mode number is displayed on LED.

Mode setting switch	Parameter item	Used LEDs and contents
0	Total number of stations	Tens digit: MST, S MST, LOCAL
1	Number of linked units	Units digit: SW, M/S, PRM, TIME
2	Number of retries	<div> MST ○ 40 S SMT ○ 20 LOCAL ○ 10 SW ○ 8 M/S ○ 4 PRM ○ 2 TIME ○ 1 </div> <div>When 26 →</div> <div> MST ○ S SMT ● LOCAL ○ SW ○ M/S ● PRM ● TIME ○ </div>
3	(Unusable)	
4	Reserved station specification	SW (off: no specification, on: specification exists)
5	Invalid station specification	SW (off: no specification, on: specification exists)
6	Station type*1 *2	SW: remote I/O station M/S: remote device station PRM: local station and intelligent device station
7	Number of occupied stations*1 *2	SW: 1 station M/S: 2 stations PRM: 3 stations TIME: 4 stations
8	Station number*1	<div> MST ○ 40 S SMT ○ 20 LOCAL ○ 10 SW ○ 8 M/S ○ 4 PRM ○ 2 TIME ○ 1 </div> <div>When 26 →</div> <div> MST ○ S SMT ● LOCAL ○ SW ○ M/S ● PRM ● TIME ○ </div>
9 to F	(Unusable)	

*1: Set the module's station number by the station number setting switch.

*2: For modules that occupy more than two stations, the same LED details are displayed for the number of occupied stations.

End

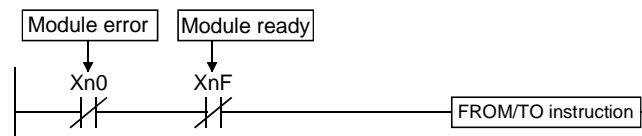
8. Programming

8.1 Precautions when Programming

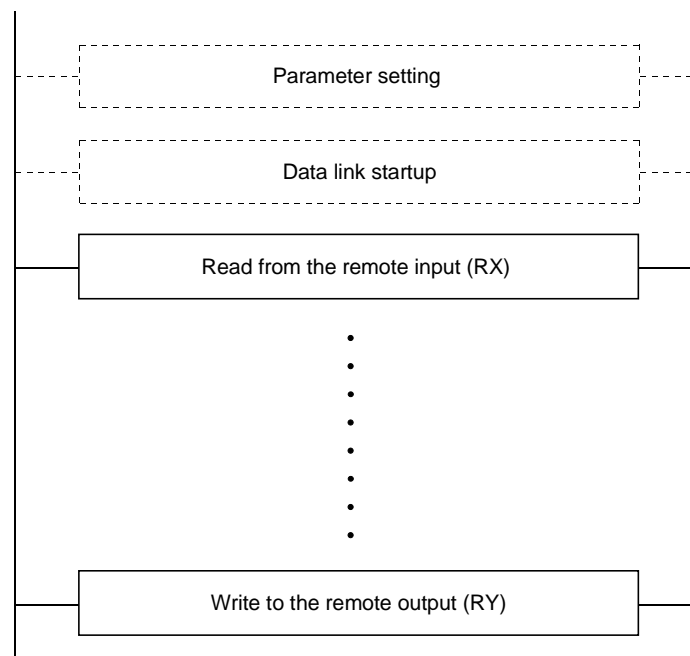
Precautions when creating programs are described below:

POINT
<p>The time to return to the system automatically is influenced by the number of sequence scans, link scans and FROM/TO instructions.</p> <p>Execute the FROM/TO instruction once or so per link scan.</p> <p>The number of FROM/TO instructions can be reduced by batch-execution of read/write from/to RX/RX/RWw/RWr/SB/SW.</p>

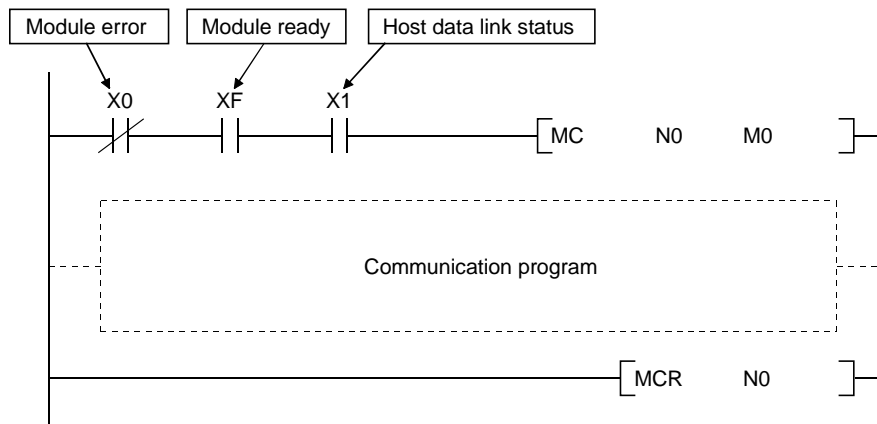
- (1) When using the FROM/TO instruction to access the module, provide interlocks using Xn0 (module error) and XnF (module ready).



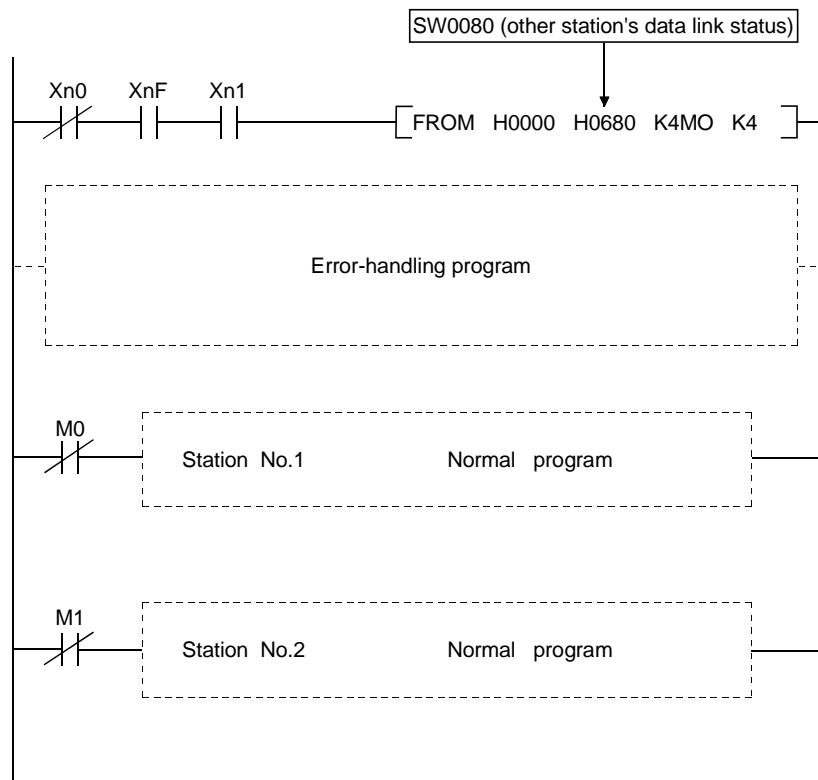
- (2) Create a read program from the remote input RX (address E0H to 15FH) after data link is started.
- Also, create a write program to the remote output RY (address 160H to 1DFH) at the last of the entire program.



- (3) In a program, reading received data and writing transmission data should be performed after the host station becomes the data link status (Xn1 is on).



- (4) Create a program which checks and interlocks the data-link status at remote I/O station, remote device station and local station.
Also, create an error-handling program.



8.2 Precautions for Registering Parameters to E²PROM

This section explains the precautions for registering parameters to E²PROM.

This section may be read by only those who will use the module indicated in Section 8.2.1 and register parameters to E²PROM more than 127 times without switching power off or resetting the CPU.

The number of times when parameters can be registered to E²PROM is cleared by switching power off or resetting the CPU.

8.2.1 Target module and versions

The target module and versions are as indicated below.

Target Module	Hardware version	Software version
A1SJ61BT11	H or later	E (manufactured in Aug., 2001) or later

8.2.2 Precautions

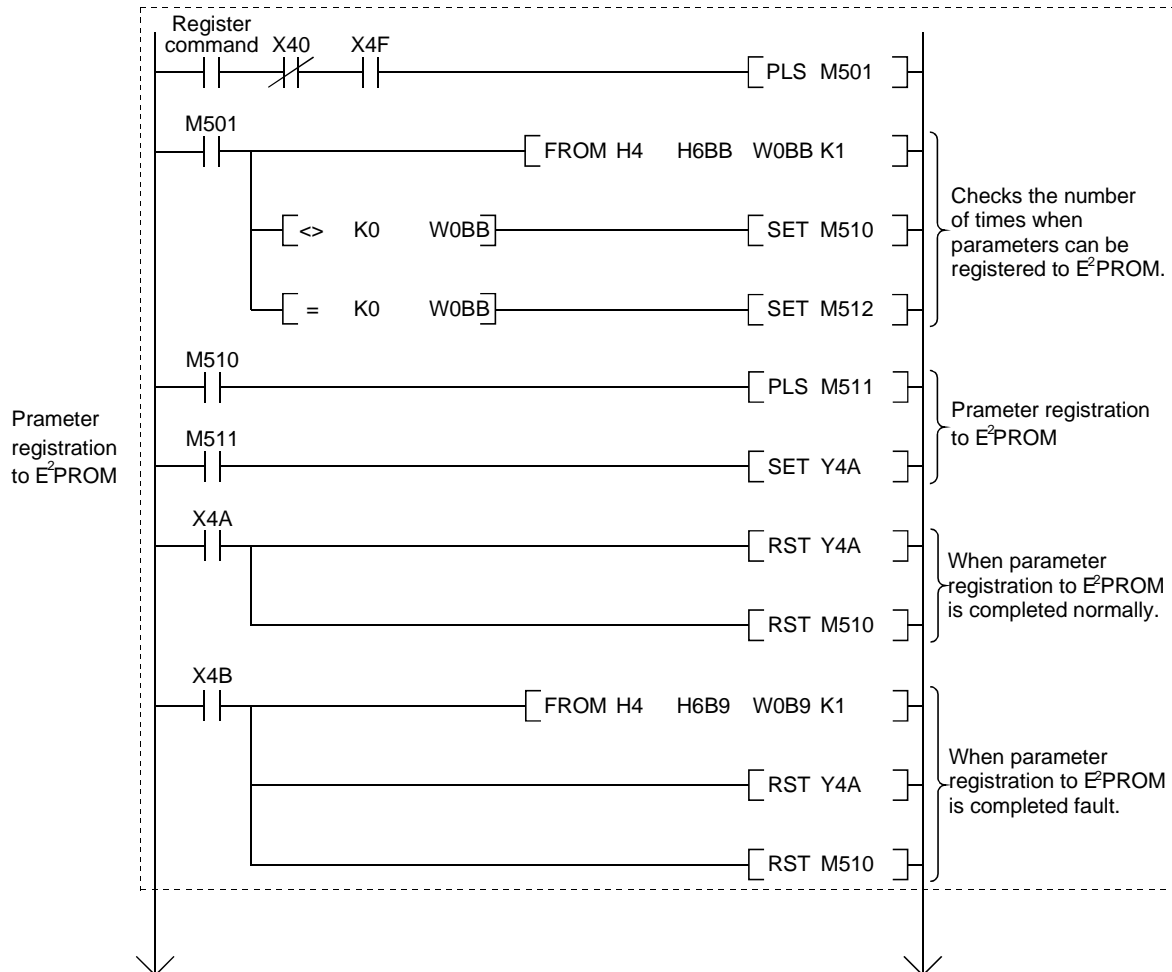
The following are the precautions for registering parameters to E²PROM.

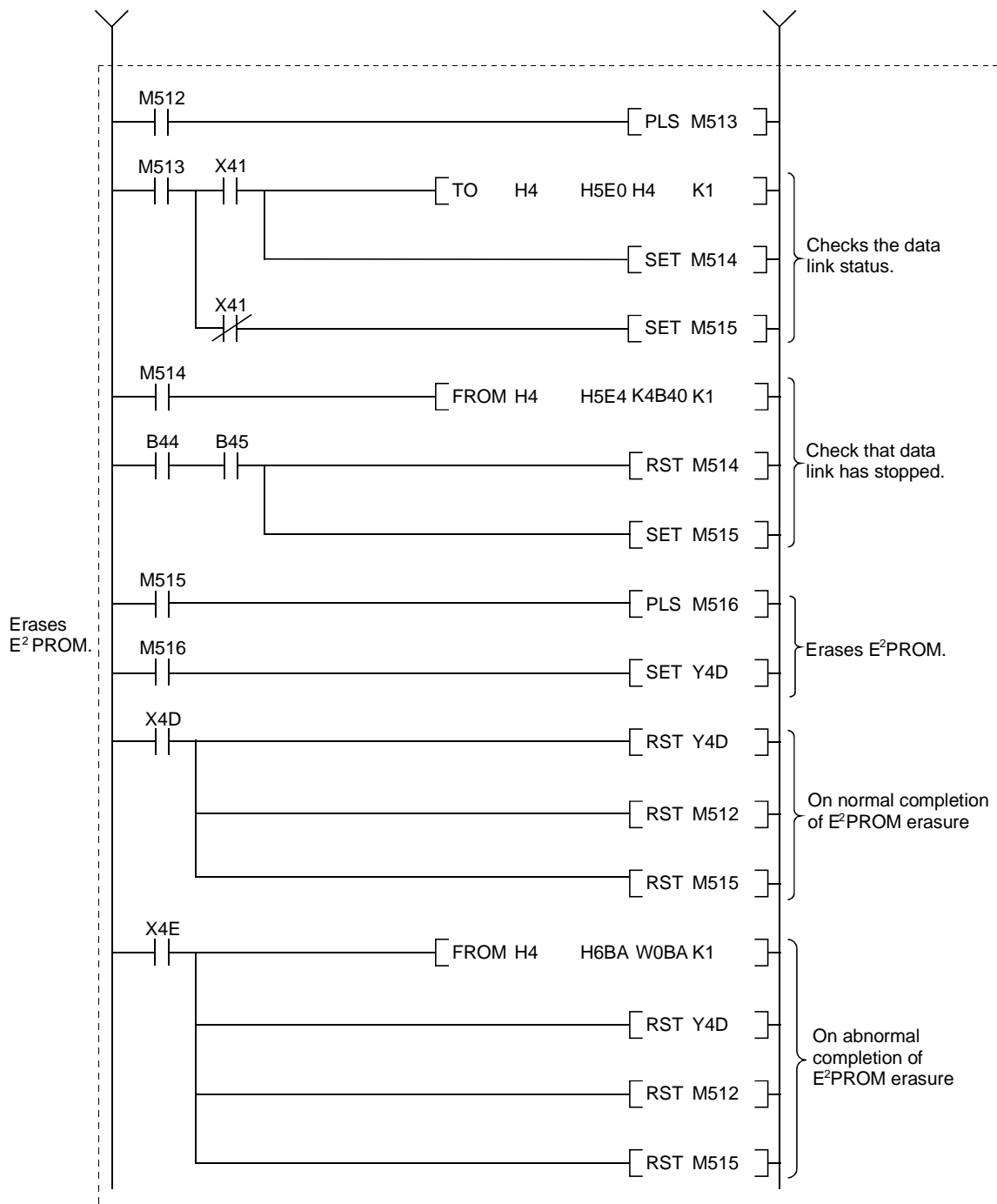
- (1) The number of times when parameters can be registered to E²PROM consecutively without switching power off or resetting the CPU is up to 127.
- (2) The link special register (SW00BB) stores the number of times when parameters can be registered to E²PROM.
- (3) When the number of times when parameters can be registered to E²PROM is zero, turn on the E²PROM erasure request (YnD) after a data link stop to erase the parameters in the E²PROM.

8.2.3 Program for registering parameters to E²PROM

The program for registering parameters to E²PROM is shown below.

This example assumes that the master module is installed to the head I/O number 40.





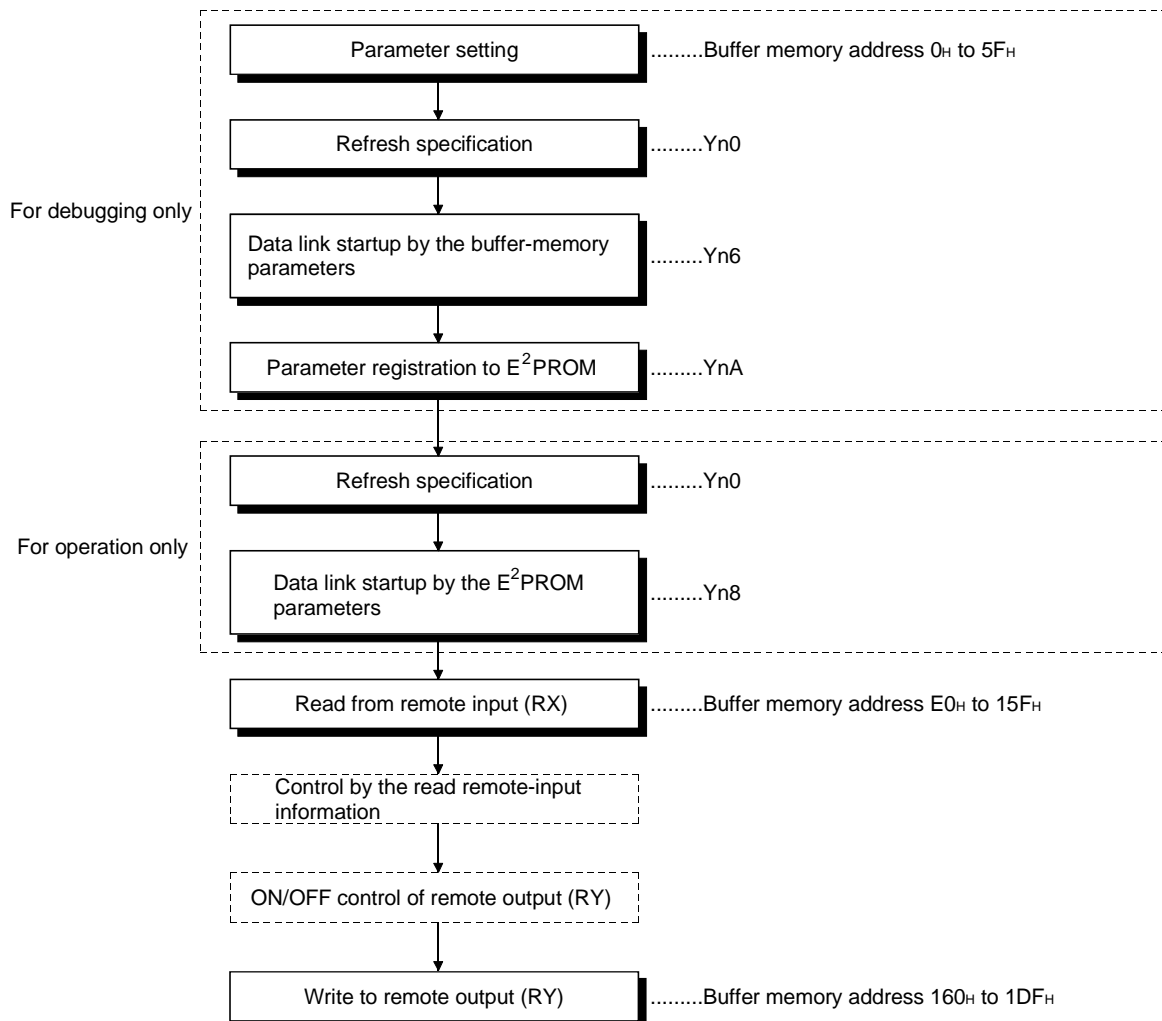
8.3 Programming Procedure

The procedure for creating a program is described.

8.3.1 Communication between the master station and remote I/O station

The basic procedure for creating a program to communicate with remote I/O station is shown below.

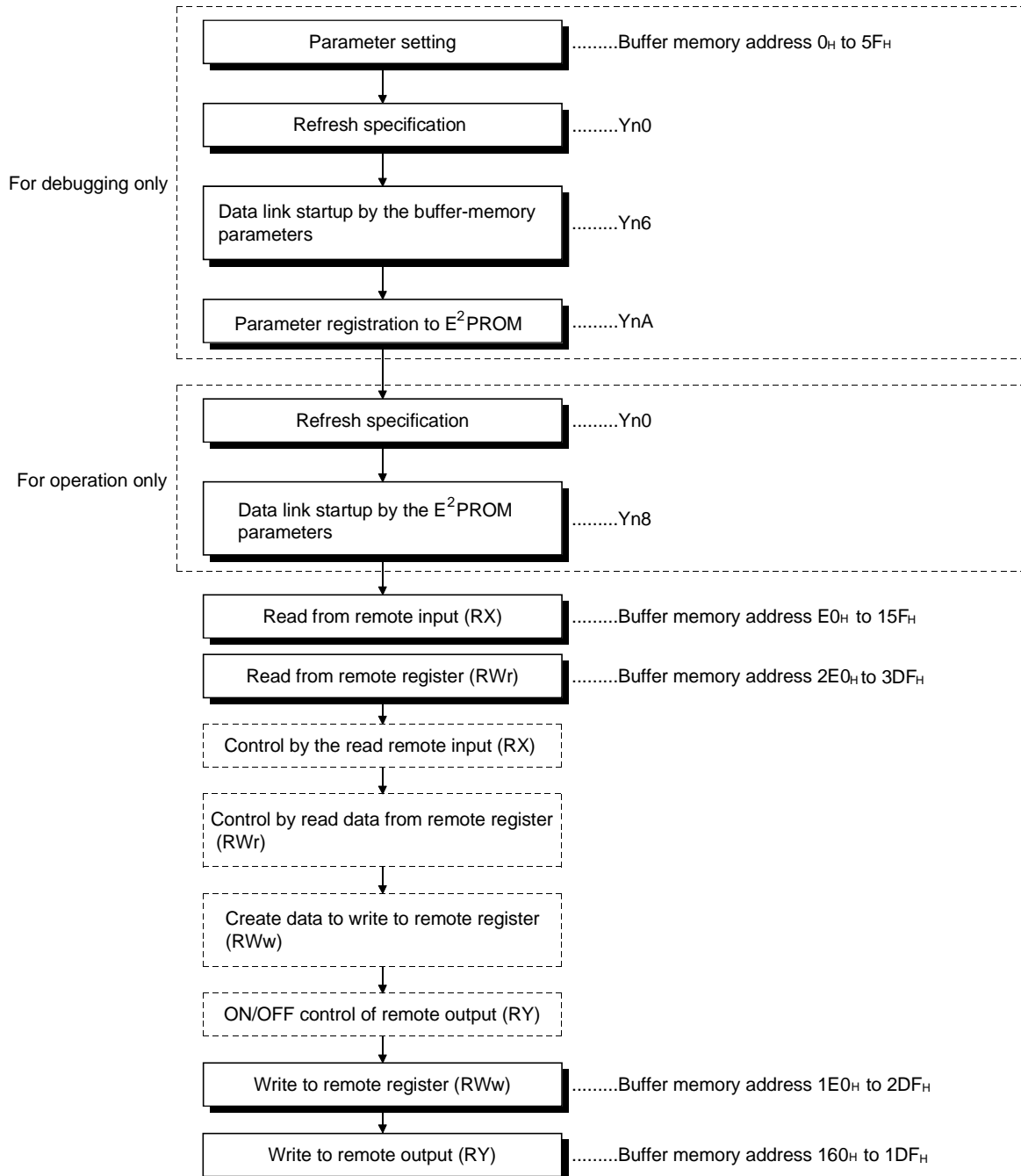
Refer to Chapter 9 for a program example.



8.3.2 Communication between the master station and remote device station

The basic procedure for creating a program to communicate with remote device station is shown below.

Refer to Chapter 10 for a program example.

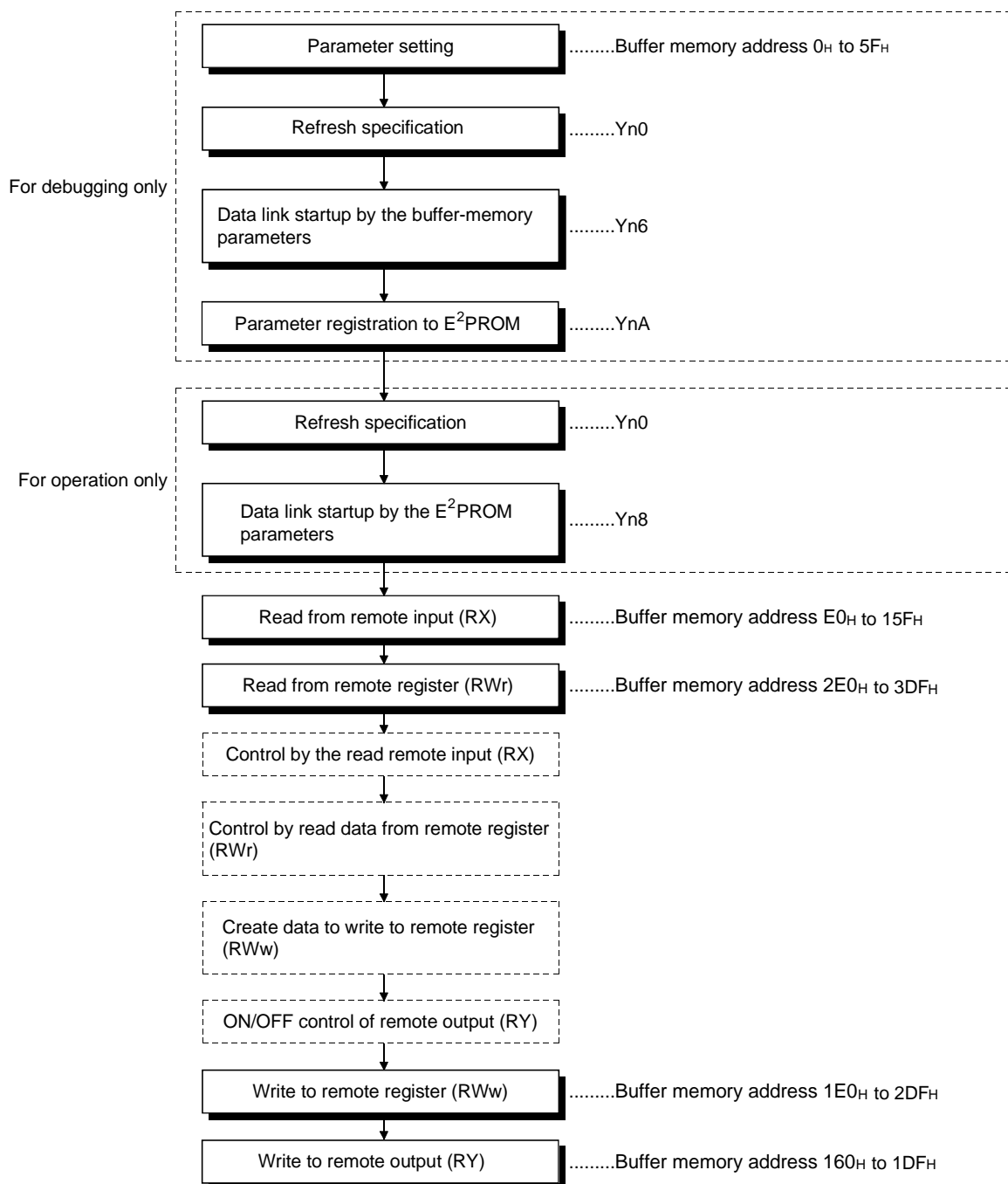


8.3.3 Communication between the master station and local station

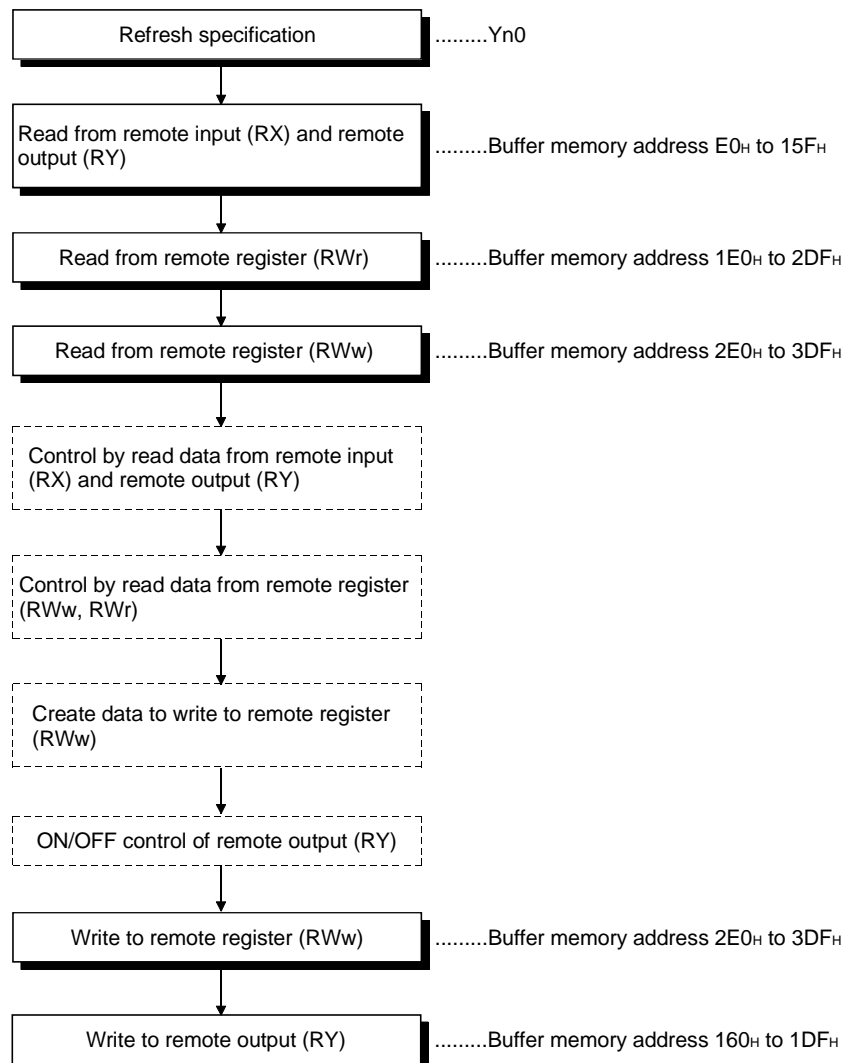
The basic procedure for creating a program to communicate with local station is shown below.

Refer to Chapter 11 for a program example.

(1) Master station



(2) Local station

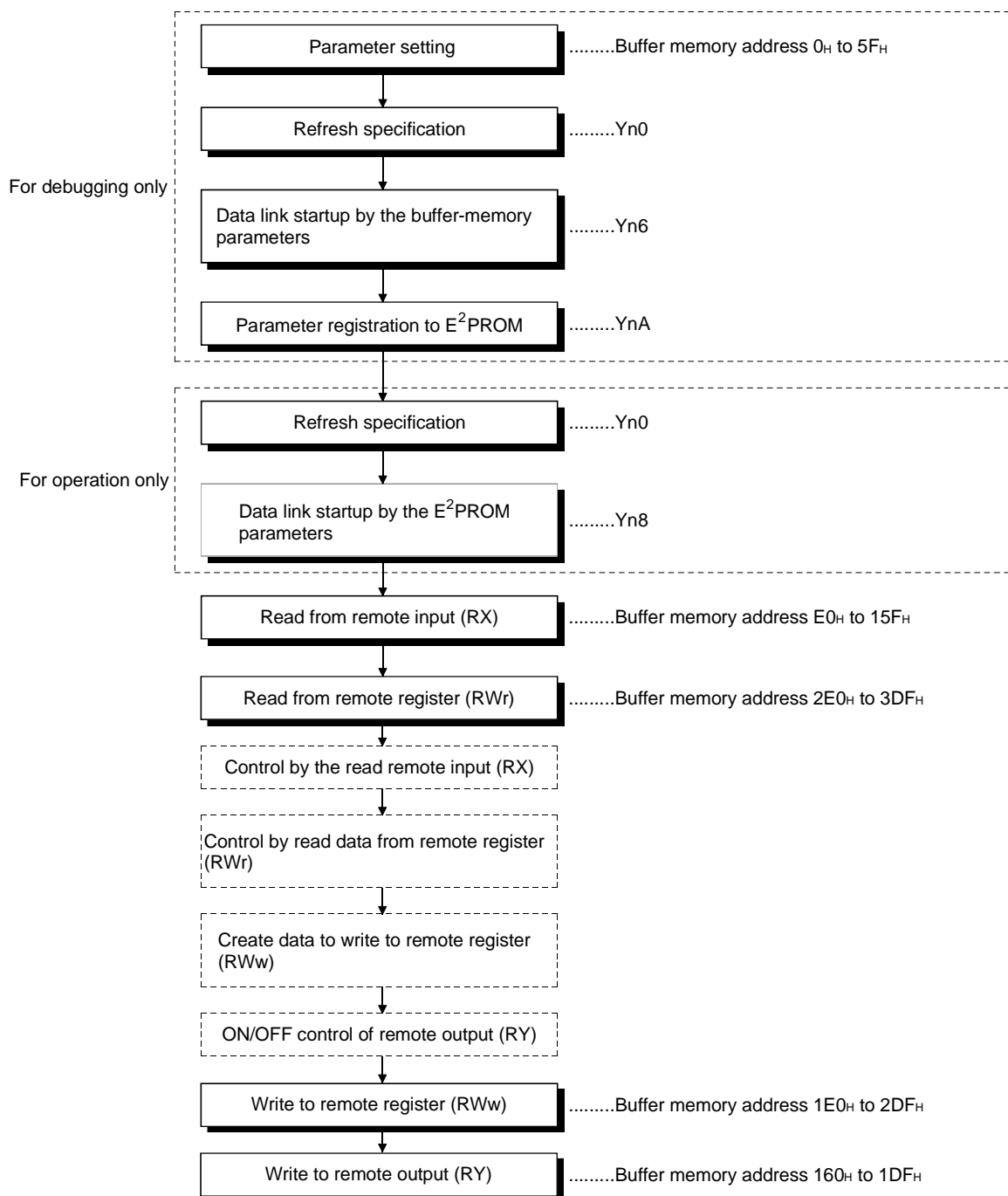


8.3.4 Communication in a compound system

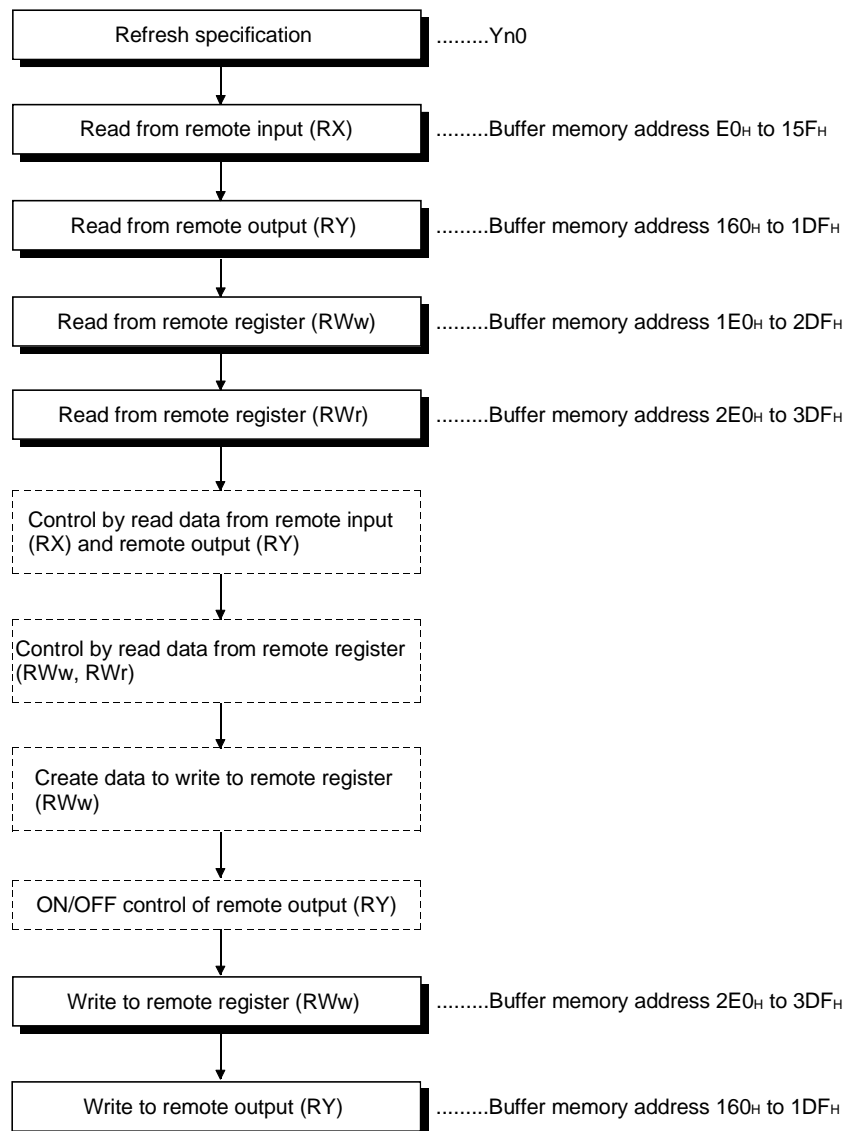
The basic procedure for creating a program to remote I/O, remote device and local stations is shown below.

Refer to Chapter 12 for a program example.

(1) Master station



(2) Local station



8.4 Link Special Relay/Register (SB/SW)

The data link status can be checked with bit data (link special relay SB) and word data (link special register SW).

The SB and SW show the information on the buffer memories of the master and local modules for convenience. The information can be read and written for use with FROM/TO commands.

- Link special relay (SB).....Buffer memory address 5E0H to 5FFH
- Link special register (SW)Buffer memory address 600H to 7FFH

8.4.1 Link special relay (SB)

Refer to Section 3.5.2 (4) for correspondence with buffer memory.

Table 8.1 Link special relay list

Number	Name	Description	Availability (○ : available, × : not available)		
			Online		Offline
			Master station	Local station	
SB0000	Data link restart	When parameter data change is not made to the data link which was stopped by SB0002, restart it with this signal. (If you have changed parameter data during a data link stop, turn on Yn6 and Yn8 to restart a data link.) OFF : No restart specification ON : Restart specification	○	○	×
SB0001 * 1	Master station switching data link start	The output information is switched from the standby master station to the master station to start the data link (Usable in standby master station). OFF : No switch command ON : Switch command	×	×	×
SB0002	Data link stop	Stops the host station's data link. However, when the master station executes this, the entire system stops. OFF : No stop specification ON : Stop specified	○	○	×
SB0004 * 1	Temporary error invalid station request	Confirms the station which had been specified by SW0003 to SW0007 to temporary error invalid station. OFF : No request ON : Request	○	×	×
SB0005 * 1	Temporary error invalid station canceling request	Cancels the station which had been specified by SW0003 to SW0007 from temporary error invalid station. OFF : No request ON : Request	○	×	×
SB0008 * 1	Line test request	Performs the line test to station which had been specified by SW0008. OFF : No request ON : Request	○	×	×
SB0009 * 1	Parameter setting test request	Reads the parameter setting information for actual system configuration. OFF : Requested ON : Not requested	○	×	×
SB0020 * 1	Module status	Indicates the buffer access status. OFF : No request ON : Request	○	○	○

* 1: Link special relay added to the function version B or later

Number	Name	Description	Availability (○ : available, × : not available)		
			Online		Offline
			Master station	Local station	
SB0030 * 2	Communication command (1) acceptance	Indicates the acceptance status of SEND/RECV/READ/WRITE/REQ commands (when channel 1 is used). (Usable on AJ61QBT11 and A1SJ61QBT11) OFF : Not accepted ON : Accepted	○	○	×
SB0031 * 2	Communication command (1) complete	Indicates the complete status of SEND/RECV/READ/WRITE/REQ commands (when channel 1 is used). (Usable on AJ61QBT11 and A1SJ61QBT11) OFF : Not completed ON : Completed	○	○	×
SB0032 * 2	Communication command (2) acceptance	Indicates the acceptance status of SEND/RECV/READ/WRITE/REQ commands (when channel 2 is used). (Usable on AJ61QBT11 and A1SJ61QBT11) OFF : Not accepted ON : Accepted	○	○	×
SB0033 * 2	Communication command (2) complete	Indicates the complete status of SEND/RECV/READ/WRITE/REQ commands (when channel 2 is used). (Usable on AJ61QBT11 and A1SJ61QBT11) OFF : Not completed ON : Completed	○	○	×
SB0040	Data link restart acceptance	Indicates data link restart specification acceptance status. OFF : Not accepted ON : Startup specification accepted	○	○	×
SB0041	Data link restart complete	Indicates data link restart specification acceptance complete status. OFF : Not complete ON : Startup complete	○	○	×
SB0042 * 1	Master station switch data link start acceptance	Indicates the acceptance status of data link start switch command from the standby master station to the master station (Usable on the standby master station). OFF : Not accepted ON : Accepted	×	×	×
SB0043 * 1	Master station switch data link start complete	Indicates the acceptance status of data link start switch command from the standby master station to the master station (Usable on the standby master station). OFF : Not completed ON : Completed	×	×	×
SB0044	Data link stop acceptance	Indicates data link stop specification acceptance status. OFF : Not accepted ON : Stop specification accepted	○	○	×
SB0045	Data link stop complete	Indicates data link stop specification acceptance complete status. OFF : Not complete ON : Stop complete	○	○	×
SB0048 * 1	Temporary error invalid station acceptance	Indicates the acceptance status of the temporary error invalid station request command. OFF : Not accepted ON : Accepted	○	×	×
SB0049 * 1	Temporary error invalid station complete status	Indicates the acceptance complete status of the temporary error invalid station request instruction. OFF : Not executed ON : Temporary error invalid station confirmed	○	×	×
SB004A * 1	Temporary error invalid station canceling acceptance status	Indicates the acceptance status of the temporary error invalid station canceling request instruction. OFF : Not executed ON : Instruction accepted	○	×	×

* 1: Link special relay added to the function version B or later

* 2: Link special relay added to the software version J (manufactured in Jan., 1998) or later

Table 8.1 Link special relay list (continued)

Number	Name	Description	Availability (○ : available, × : not available)																	
			Online		Offline															
			Master station	Local station																
SB004B * 1	Temporary error invalid station canceling complete status	Indicates the acceptance complete status of the temporary error invalid station canceling request instruction. OFF : Not executed ON : Temporary error invalid station canceling complete	○	×	×															
SB004C * 1	Line test acceptance status	Indicates the line test request acceptance status. OFF : Not executed ON : Specification accepted	○	×	×															
SB004D * 1	Line test complete status	Indicates the line test complete status. OFF : Not completed ON : Test complete	○	×	×															
SB004E * 1	Parameter setting test acceptance status	Indicates the parameter setting test request acceptance status. OFF : Not accepted ON : Specification accepted	○	×	×															
SB004F * 1	Parameter setting test complete status	Indicates the parameter ssetting test complete status. OFF : Not completed ON : Test complete	○	×	×															
SB0050	Offline test status	Indicates the offline-test execution status. OFF : Not executed ON : In progress	×	×	○															
SB0060	Mode	Indicates the module's mode setting switch setting status. OFF : Online (0) ON : Other than online (0)	○	○	○															
SB0061	Station type	Indicates the setting status of the module station number setting switch. OFF : Master station (station number 0) ON : Local station (station numbers 1 to 64)	○	○	×															
SB0062 * 1	Standby master station setting	Indicates the setting status of the standby master station. OFF : Not set ON : Set	○	×	×															
SB0065	Input data status of a data link error station	Indicates the setting status of the module's condition setting switch (DIP switch) SW4. OFF : Clear ON : Keep	○	○	×															
SB0066	Number of occupied stations	Indicates the setting of the module's condition setting switch (DIP switch) SW5, SW6. <table border="1"><thead><tr><th>Number of occupied stations</th><th>SB0066 (SW5)</th><th>SB0067 (SW6)</th></tr></thead><tbody><tr><td>1 station</td><td>OFF</td><td>OFF</td></tr><tr><td>2 stations</td><td>OFF</td><td>ON</td></tr><tr><td>3 stations</td><td>ON</td><td>ON</td></tr><tr><td>4 stations</td><td>ON</td><td>OFF</td></tr></tbody></table>	Number of occupied stations	SB0066 (SW5)	SB0067 (SW6)	1 station	OFF	OFF	2 stations	OFF	ON	3 stations	ON	ON	4 stations	ON	OFF	×	○	×
Number of occupied stations			SB0066 (SW5)	SB0067 (SW6)																
1 station			OFF	OFF																
2 stations			OFF	ON																
3 stations			ON	ON																
4 stations	ON	OFF																		
SB0067 * 2																				
SB0069	Module mode	Indicates the setting status of the module's condition setting switch (DIP switch) SW8. (Usable on AJ61BT11 and A1SJ61BT11) OFF : Intelligent mode ON : I/O mode	○	○	×															
SB006A	Switch setting status	Indicates the switch setting status. OFF : Normal ON : Setting error exists (Store the error code in SW006A)	○	○	○															
SB006D	Parameter setting status	Indicates the parameter setting status. OFF : Normal ON : Setting error exists (Store the error code in SW0068)	○	×	×															
SB006E	Host station operation status	Indicates the host station data link operation status. OFF : In operation ON : Not in operation	○	○	×															
SB0070 * 1	Master station data link status	Indicates data link status. OFF : Data link for master station ON : Data link for waiting master station	○	○	×															
SB0071 * 1	Standby master station information	Indicates whether there is standby master station or not. OFF : Not present ON : Present	○	○	×															

* 1 : Link special relay added to the function version B or later

* 2 : Link special relay added to the AJ61BT11 of hardware version F or later and the A1SJ61BT11 of hardware version G or later

Number	Name	Description	Availability (○ : available, × : not available)		
			Online		Offline
			Master station	Local station	
SB0072 * 1	Scan mode setting	Indicates the scan mode setting status. OFF : Asynchronous mode ON : Synchronous mode	○	×	×
SB0073	Operation specification when CPU is down status	Indicates specification when CPU is down status by parameter. OFF : Stop ON : Continue	○	×	×
SB0074	Reserved station specified status	Indicates the reserved station specified status by parameters (SW0074 to SW0077). OFF : No specification ON : Specification exists,	○	○	×
SB0075	Error invalid station specified status	Indicates the error invalid station specified status by parameters (SW0078 to SW007B). OFF : No specification ON : Specification exists	○	○	×
SB0076 * 1	Temporary error invalid station setting information	Indicates the setting of yes/no for temporary error invalid station. OFF : No ON : Yes	○	○	×
SB0077	Parameter receive status	Indicates the parameter receive status from the master station. OFF : Receive complete ON : Receive not complete	×	○	×
SB0078 * 1	Host station switch change	Detects the setting switch change of the host station during data link. OFF : Not change ON : Change	○	○	×
SB0080	Other station's data link status	Indicates the communication status of the other stations. (SW0080 to SW0083). OFF : All stations normal ON : Faulty station exists	○	○	×
SB0081 * 1	Other station watchdog timer error status	Indicates the watch dog timer error occurrence status in the other station (SW0084 to SW0087). OFF : No error ON : Error	○	○	×
SB0082 * 1	Other station fuse blown status	Indicates the fuse blow occurrence status in the other station (SW0088 to SW008B). OFF : Not blown ON : Blown	○	○	×
SB0083 * 1	Other station switch change status	Detects the setting switch change of the other station during data link. OFF : Not change ON : Change	○	○	×
SB0090	Host line status	Indicates the host station line status. OFF : Normal ON : Error (disconnection)	×	○	×
SB0094 * 1	Transient transmission status	Indicates the transient transmission error occurrence status (SW0094 to SW00897). OFF : No error ON : Error	○	○	×
SB0095 * 1	Master station transient transmission status	Indicates the transient transmission status of the master station. OFF : Normal ON : Error	×	○	×
SB00A0 * 2	RECV command (1) execution request flag	Indicates the RECV command execution request status (when channel 1 is used). (Usable on AJ61QBT11 and A1SJ61QBT11) OFF : No execution request ON : Execution request	○	○	×
SB00A1 * 2	RECV command (2) execution request flag	Indicates the RECV command execution request status (when channel 1 is used). (Usable on AJ61QBT11 and A1SJ61QBT11) OFF : No execution request ON : Execution request	○	○	×

* 1: Link special relay added to the function version B or later

* 2: Link special relay added to the software version J (manufactured in Jan., 1998) or later

8.4.2 Link special register (SW)

The value in the () next to the number indicates the buffer memory address.

Table 8.2 Link special register list

Number	Name	Description	Availability (○ : available, × : not available)																																																				
			Online		Offline																																																		
			Master station	Local station																																																			
SW0003 * (603H)	Multiple temporary error invalid station specification	Selects whether to specifies multiple temporary error invalid stations: 00 : Specifies multiple stations as indicated in SW004 to SW007. 01 to 64 : Specifies a single station from 1 to 64. ※ Specifies the station number used as the temporary error invalid station.	○	×	×																																																		
SW0004 * (604H) SW0005 * (605H) SW0006 * (606H) SW0007 * (607H)	Temporary error invalid station specification * 1	Specifies the temporary error invalid station. 0 : Not specified as a temporary error invalid station. 1 : Specified as a temporary error invalid station. <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0004</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0005</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0006</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0007</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0004	16	15	14	13	to	4	3	2	1	SW0005	32	31	30	29	to	20	19	18	17	SW0006	48	47	46	45	to	36	35	34	33	SW0007	64	63	62	61	to	52	51	50	49	○	×	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0004	16	15	14	13	to	4	3	2	1																																														
SW0005	32	31	30	29	to	20	19	18	17																																														
SW0006	48	47	46	45	to	36	35	34	33																																														
SW0007	64	63	62	61	to	52	51	50	49																																														
SW0008 * (608H)	Line test station setting	Sets the station to perform line tests. 0 : Entire system (performed for all stations) 01 to 64 : Specified station Default value : 0	○	×	×																																																		
SW0009 * (609H)	Watchdog time setting	Sets the response monitoring time for transient transmission. Default value : 5 (s) Setting range : 0 to 360 (s) ※ When a value out of the range is set, the value will be set to 360 seconds.	○	×	×																																																		
SW000A * (60AH)	CPU watchdog time setting	Sets the CPU watchdog time when an access to CPU is gained through the AJ65BT-G4 using the dedicated instructions. Default value : 5 (s) Setting range : 0 to 3600 (s) ※ If a value out of the range is set, the value will be set to 3600s. Note: Set on the CC-Link master station or local station connected to the applicable CPU.	○	○	×																																																		
SW0020 * (620H)	Module status	Indicates the module status 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	○	○	○																																																		
SW0041 (641H)	Data link restart result	Stores the execution results of the data link restart specification by SB0000. 0 : Normal 1 to : Stores error code (Refer to Section 13.3.)	○	○	×																																																		
SW0043 * (643H)	Master station switch data link start result	Indicates the switch specification execution result and stores the execution results of the master station switch data link start specification by SB0001.(Usable on standby master station) 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	×	×	×																																																		
SW0045 (645H)	Data link stop result	Stores the execution results of the data link stop specification by SB0002. 0 : Normal 1 to : Error code (Refer to Section 13.3.)	○	○	×																																																		

* : Link special relay added to the function version B or later

* 1 : Turns on only the bit for the head station number.

Number	Name	Description	Availability (○ : available, × : not available)		
			Online		Offline
			Master station	Local station	
SW0049 (649H)	Temporary error invalid station request result	Stores the execution results of the temporary error invalid station request specification by SB0004. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	○	×	×
SW004B (64BH)	Temporary error invalid station canceling request result	Stores the execution results of the temporary error invalid station canceling request specification by SB0005. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	○	×	×
SW004D * (64DH)	Line test request result	Stores the execution results of the line test request specification by SB0008. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	○	×	×
SW004F * (64FH)	Parameter setting test request result	Stores the execution results of the parameter setting test request by SB0009. 0 : Normal Other than 0 : Stores error code	○	×	×
SW0060 (660H)	Mode setting switch status	Stores the setting status of the mode setting switch. 0: Online (remote net mode) 1: Online (remote I/O net mode) 2: Offline 3: Line test 1 4: Line test 2 5: Parameter verification test 6: Hardware test	○	○	○
SW0061 (661H)	Station number setting switch status	Stores the station number setting switch's setting status. 0 : Master station 1 to 64 : Local station	○	○	○
SW0062 (662H)	Condition setting switch status	The setting status of the condition setting switch (DIP switch) is stored. 0: OFF 1: ON <div style="text-align: center;"> </div>	○	○	○
SW0064 * (664H)	No. of retries setting information	Stores the number of retries setting information when responding to an error. 1 to 7 (times)	○	×	×
SW0065 * (664H)	No. of automatic return stations information	Stores the number of automatic return stations setting information during one link scan. 1 to 10 (modules)	○	×	×
SW0066 * (666H)	Delay timer information	Stores the scan interval delay time setting information. 0 to 100 (ms)	○	×	×
SW0067 (667H)	Parameter information	The parameter information area to be used is stored. 1: Buffer memory (data link startup by Yn6) 2: E ² PROM (data link startup by Yn8)	○	×	○
SW0068 (668H)	Host parameter status	Parameter setting status is stored. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	○	×	×

* : Link special relay added to the function version B or later

Table 8.2 Link special register list (continued)

Number	Name	Description	Availability (○ : available, × : not available)																																																				
			Online		Offline																																																		
			Master station	Local station																																																			
SW0069 (669H)	Loading status *2	The station number overlap and consistency with the parameters are stored for each module. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.) ※ Details are stored in SW0098 to 9B and SW009C to 9F.	○	×	×																																																		
SW006A (66AH)	Switch setting status	Switch setting status is stored. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	○	○	×																																																		
SW006D (66DH)	Max. link scan time	Stores the maximum value of the link scan time (in 1 ms units).	○	○	×																																																		
SW006E (66EH)	Current link scan time	Stores the current value of the link scan time (in 1 ms units).	○	○	×																																																		
SW006F (66FH)	Min. link scan time	Stores the minimum value of the link scan time (in 1 ms units).	○	○	×																																																		
SW0070 (670H)	Total number of stations	Stores the final station number set in the parameter. 1 to 64 stations	○	×	×																																																		
SW0071 (671H)	Max. communication station number	Stores the maximum station number (station number of the station number setting switch) in the data link. 1 to 64 (stations)	○	×	×																																																		
SW0072 (672H)	Number of connected modules	Stores the number of modules in the data link. 1 to 64 (modules)	○	×	×																																																		
SW0073 * (673H)	Standby master station number	Stores the standby master station number. 1 to 64 (stations)	○	○	×																																																		
SW0074 (674H) SW0075 (675H) SW0076 (676H) SW0077 (677H)	Reserved station specified status *1	Stores the setting status of reserved station. 0: Not reserved station 1: Reserved station <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0074</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0075</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0076</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0077</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0074	16	15	14	13	to	4	3	2	1	SW0075	32	31	30	29	to	20	19	18	17	SW0076	48	47	46	45	to	36	35	34	33	SW0077	64	63	62	61	to	52	51	50	49	○	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0074	16	15	14	13	to	4	3	2	1																																														
SW0075	32	31	30	29	to	20	19	18	17																																														
SW0076	48	47	46	45	to	36	35	34	33																																														
SW0077	64	63	62	61	to	52	51	50	49																																														
SW0078 (678H) SW0079 (679H) SW007A (67AH) SW007B (67BH)	Error invalid station specified status *1	Stores the error invalid station setting status. 0: Not error invalid station 1: Error invalid station <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0078</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0079</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW007A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW007B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0078	16	15	14	13	to	4	3	2	1	SW0079	32	31	30	29	to	20	19	18	17	SW007A	48	47	46	45	to	36	35	34	33	SW007B	64	63	62	61	to	52	51	50	49	○	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0078	16	15	14	13	to	4	3	2	1																																														
SW0079	32	31	30	29	to	20	19	18	17																																														
SW007A	48	47	46	45	to	36	35	34	33																																														
SW007B	64	63	62	61	to	52	51	50	49																																														
SW007C * (67CH) SW007D * (67DH) SW007E * (67EH) SW007F * (67FH)	Temporary error invalid station specified status *1	Stores the temporary error invalid station specified status. 0 : Not temporary error invalid station 1 : Temporary error invalid station <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW007C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW007D</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW007E</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW007F</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW007C	16	15	14	13	to	4	3	2	1	SW007D	32	31	30	29	to	20	19	18	17	SW007E	48	47	46	45	to	36	35	34	33	SW007F	64	63	62	61	to	52	51	50	49	○	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW007C	16	15	14	13	to	4	3	2	1																																														
SW007D	32	31	30	29	to	20	19	18	17																																														
SW007E	48	47	46	45	to	36	35	34	33																																														
SW007F	64	63	62	61	to	52	51	50	49																																														

* : Link special register added to the function version B or later

*1 : Turns on only the bit for the head station number.

*2 : Check is performed only when the link is started up, and stored.

Number	Name	Description	Availability (○ : available, × : not available)																																																				
			Online		Offline																																																		
			Master station	Local station																																																			
SW0080 (680 _H) SW0081 (681 _H) SW0082 (682 _H) SW0083 (683 _H)	Other station data link status *3	Stores the data link status of each station. 0: Normal 1: Data link error occurred <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0080</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0081</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0082</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0083</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0080	16	15	14	13	to	4	3	2	1	SW0081	32	31	30	29	to	20	19	18	17	SW0082	48	47	46	45	to	36	35	34	33	SW0083	64	63	62	61	to	52	51	50	49	○	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0080	16	15	14	13	to	4	3	2	1																																														
SW0081	32	31	30	29	to	20	19	18	17																																														
SW0082	48	47	46	45	to	36	35	34	33																																														
SW0083	64	63	62	61	to	52	51	50	49																																														
SW0084 * (684 _H) SW0085 * (685 _H) SW0086 * (686 _H) SW0087 * (687 _H)	Other station watchdog timer error occurrence status * 1	Stores the other station watchdog timer error occurrence status. 0: Normal 1: Watchdog timer error occurrence <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0084</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0085</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0086</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0087</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0084	16	15	14	13	to	4	3	2	1	SW0085	32	31	30	29	to	20	19	18	17	SW0086	48	47	46	45	to	36	35	34	33	SW0087	64	63	62	61	to	52	51	50	49	○	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0084	16	15	14	13	to	4	3	2	1																																														
SW0085	32	31	30	29	to	20	19	18	17																																														
SW0086	48	47	46	45	to	36	35	34	33																																														
SW0087	64	63	62	61	to	52	51	50	49																																														
SW0088 (688 _H) SW0089 (689 _H) SW008A (68A _H) SW008B (68B _H)	Other station fuse blown status *3	Stores the fuse blown status of each station. 0: Normal 1: Fuse blown <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0088</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0089</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW008A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW008B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0088	16	15	14	13	to	4	3	2	1	SW0089	32	31	30	29	to	20	19	18	17	SW008A	48	47	46	45	to	36	35	34	33	SW008B	64	63	62	61	to	52	51	50	49	○	×	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0088	16	15	14	13	to	4	3	2	1																																														
SW0089	32	31	30	29	to	20	19	18	17																																														
SW008A	48	47	46	45	to	36	35	34	33																																														
SW008B	64	63	62	61	to	52	51	50	49																																														
SW008C * (68C _H) SW008D * (68D _H) SW008E * (68E _H) SW008F * (68F _H)	Other station switch change status * 1	Stores the switch change status of other station during data link. 0: Not change 1: Change <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW008C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW008D</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW008E</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW008F</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW008C	16	15	14	13	to	4	3	2	1	SW008D	32	31	30	29	to	20	19	18	17	SW008E	48	47	46	45	to	36	35	34	33	SW008F	64	63	62	61	to	52	51	50	49	○	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW008C	16	15	14	13	to	4	3	2	1																																														
SW008D	32	31	30	29	to	20	19	18	17																																														
SW008E	48	47	46	45	to	36	35	34	33																																														
SW008F	64	63	62	61	to	52	51	50	49																																														
SW0090 (690 _H)	Host station line status	Stores the host station line status. 0: Normal 1: Data link not possible (wire breakage)	×	○	×																																																		

* : Link special register added to the function version B or later

* 1 : Turns on only the bit for the head station number.

* 3 : Turns on the bit for the number of occupied stations.

Table 8.2 Link special register list (continued)

Number	Name	Description	Availability (○ : available, × : not available)																																																				
			Online		Offline																																																		
			Master station	Local station																																																			
SW0094 * (694H) SW0095 * (695H) SW0096 * (696H) SW0097 * (697H)	Transient transmission error status * 1	Stores the transient transmission error occurrence status for each station. 0: Normal 1: Transient transmission error occurrence <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0094</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0095</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0096</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0097</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0094	16	15	14	13	to	4	3	2	1	SW0095	32	31	30	29	to	20	19	18	17	SW0096	48	47	46	45	to	36	35	34	33	SW0097	64	63	62	61	to	52	51	50	49	○	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0094	16	15	14	13	to	4	3	2	1																																														
SW0095	32	31	30	29	to	20	19	18	17																																														
SW0096	48	47	46	45	to	36	35	34	33																																														
SW0097	64	63	62	61	to	52	51	50	49																																														
SW0098 (698H) SW0099 (699H) SW009A (69AH) SW009B (69BH)	Station number overlap status * 4	The overlapping status is stored when each module's first station number does not overlap. 0: Normal 1: Station number overlaps (only for the first station number) <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0098</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0099</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW009A</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW009B</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0098	16	15	14	13	to	4	3	2	1	SW0099	32	31	30	29	to	20	19	18	17	SW009A	48	47	46	45	to	36	35	34	33	SW009B	64	63	62	61	to	52	51	50	49	○	×	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW0098	16	15	14	13	to	4	3	2	1																																														
SW0099	32	31	30	29	to	20	19	18	17																																														
SW009A	48	47	46	45	to	36	35	34	33																																														
SW009B	64	63	62	61	to	52	51	50	49																																														
SW009C (69CH) SW009D (69DH) SW009E (69EH) SW009F (69FH)	Loading/parameter consistency status * 4	The consistency status with the parameters are stored. 0: Normal 1: Consistency error <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW009C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW009D</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW009E</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW009F</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW009C	16	15	14	13	to	4	3	2	1	SW009D	32	31	30	29	to	20	19	18	17	SW009E	48	47	46	45	to	36	35	34	33	SW009F	64	63	62	61	to	52	51	50	49	○	×	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW009C	16	15	14	13	to	4	3	2	1																																														
SW009D	32	31	30	29	to	20	19	18	17																																														
SW009E	48	47	46	45	to	36	35	34	33																																														
SW009F	64	63	62	61	to	52	51	50	49																																														
SW00B4 (6B4H) SW00B5 (6B5H) SW00B6 (6B6H) SW00B7 (6B7H)	Line test 1 result * 3	Line test 1 test results are stored. 0: Normal 1: Error <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW00B4</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW00B5</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW00B6</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW00B7</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicates station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW00B4	16	15	14	13	to	4	3	2	1	SW00B5	32	31	30	29	to	20	19	18	17	SW00B6	48	47	46	45	to	36	35	34	33	SW00B7	64	63	62	61	to	52	51	50	49	×	×	○
	b15	b14	b13	b12	to	b3	b2	b1	b0																																														
SW00B4	16	15	14	13	to	4	3	2	1																																														
SW00B5	32	31	30	29	to	20	19	18	17																																														
SW00B6	48	47	46	45	to	36	35	34	33																																														
SW00B7	64	63	62	61	to	52	51	50	49																																														
SW00B8 (6B8H)	Line test 2 result	Stores the line test 2 results. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	×	×	○																																																		
SW00B9 (6B9H)	E ² PROM registration status	E ² PROM parameter registration status is stored. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3.)	○	×	×																																																		
SW00BA * 5 (6BA H)	E ² PROM erasure result	The result of E ² PROM erasure request (YnD) is stored. 0 : Normal Other than 0 : Stores the error code.	○	×	×																																																		
SW00BB * 5 (6BB H)	Checks the number of times when parameters can be registered to E ² PROM.	The number of times when parameters can be registered to E ² PROM is stored. Decrement when the parameter registration request to E ² PROM (YnA) is given.	○	×	×																																																		

* : It is the link special relay which had been added by function version B or later.

* 1 : Turns on only the bit for the head station number.

* 3 : Turns on the bit for the number of occupied stations.

* 4 : Turns on only the bit for the head station number. And check is performed only when the link is started up, and stored.

* 5 : Link special register added to the software version E (manufactured in Aug., 2001) or later of the A1SJ61BT11.

The timing when the link special register (SW) data is updated differs depending on the number.

The update timing is indicated in Table 8.3.

Table 8.3 Update timing of the link special register

Link special register	Data update timing	Link special register	Data update timing
SW0041	Updated independently regardless of SB	SW0071	Updated independently regardless of SB (Update after each station is stabilized.)
SW0045		SW0072	When SB0074 changes
SW0060	When SB0060 changes	SW0074 to SW0077	When SB0075 changes
SW0061	When SB0061 changes	SW0078 to SW007B	When SB0080 changes
SW0062	Updated independently regardless of SB	SW0080 to SW0083	Updated independently regardless of SB
SW0067		SW0088 to SW008B	When SB0090 changes
SW0068		SW0090	Updated independently regardless of SB
SW0069		SW0098 to SW009B	
SW006A		SW009C to SW009F	
SW006D		SW00B4 to SW00B7	
SW006E		SW00B8	
SW006F		SW00B9	
SW0070		—	—

MEMO

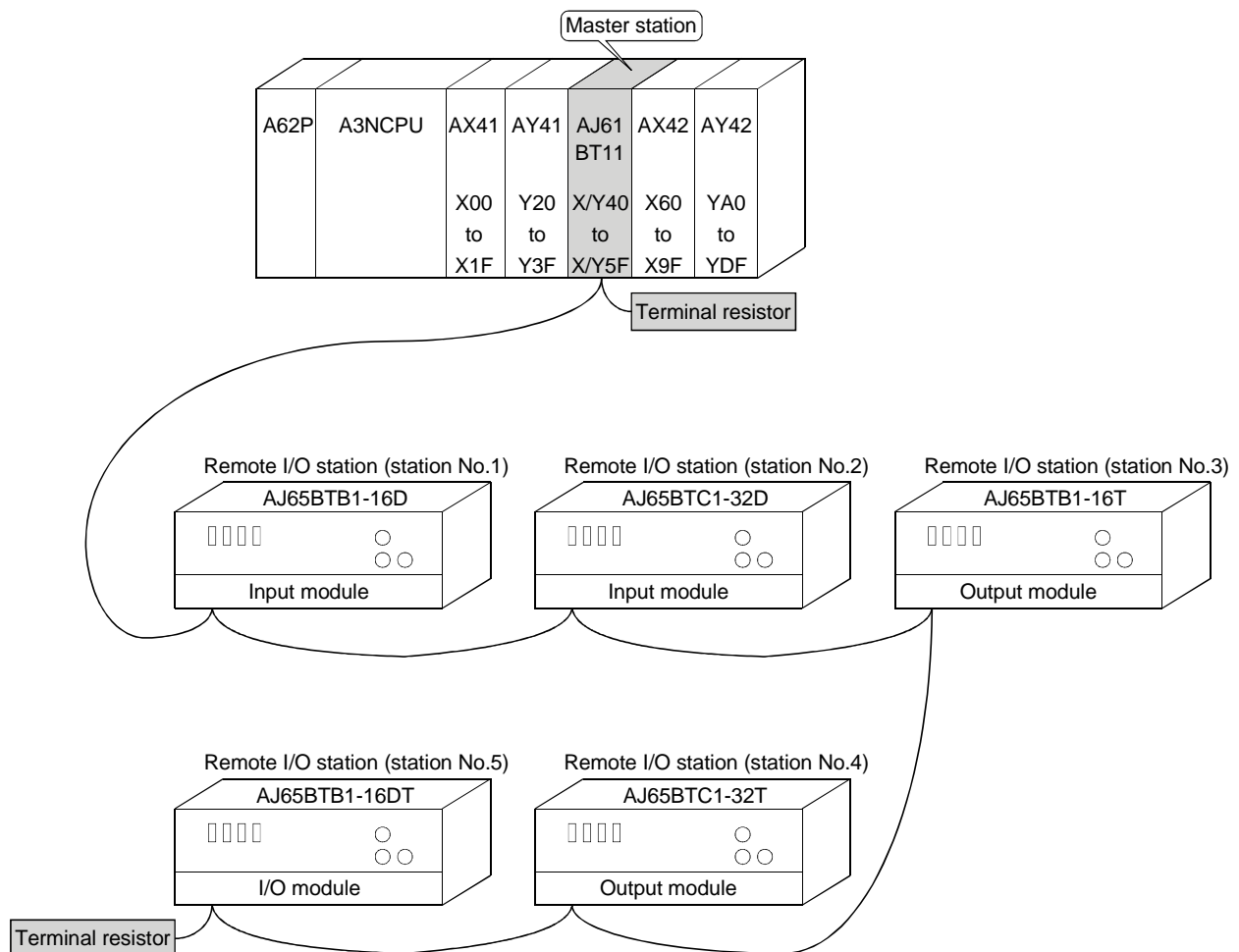
[illegible]

9. Communication Between the Master Station and the Remote I/O Station

How to set, program, and confirm the operation of the module is described using a system configuration example.

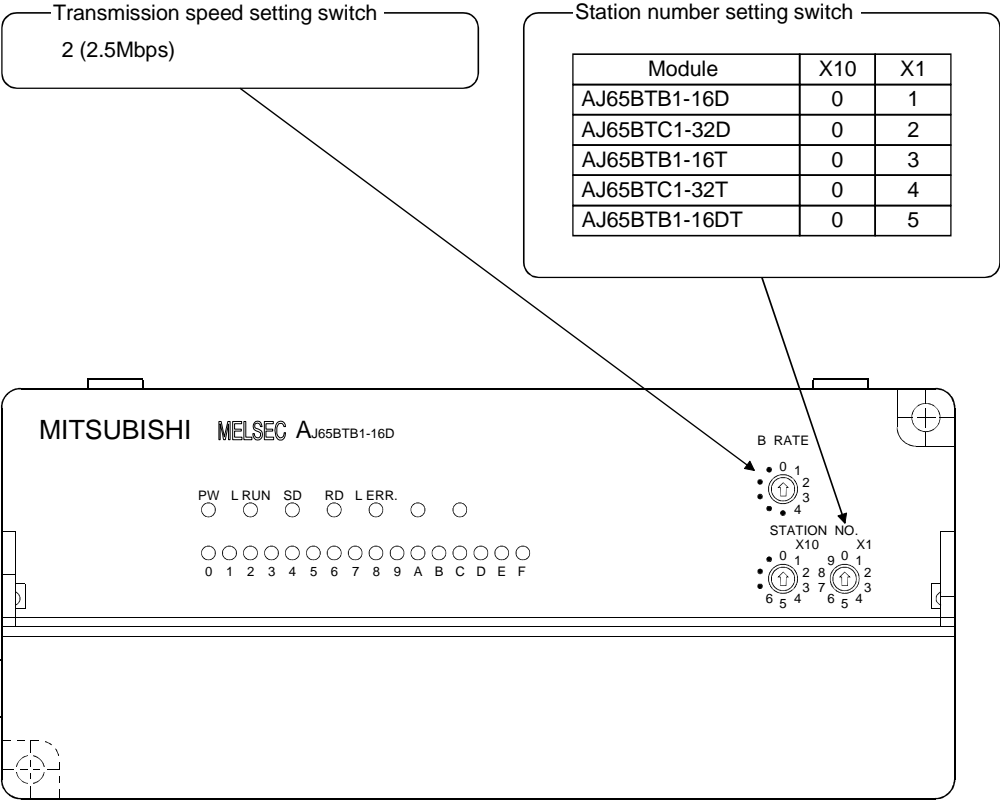
9.1 System Configuration

A system with five remote I/O stations is used as an example.



9.1.2 Setting of the remote I/O station

The settings of the switches on the remote I/O station are shown below:

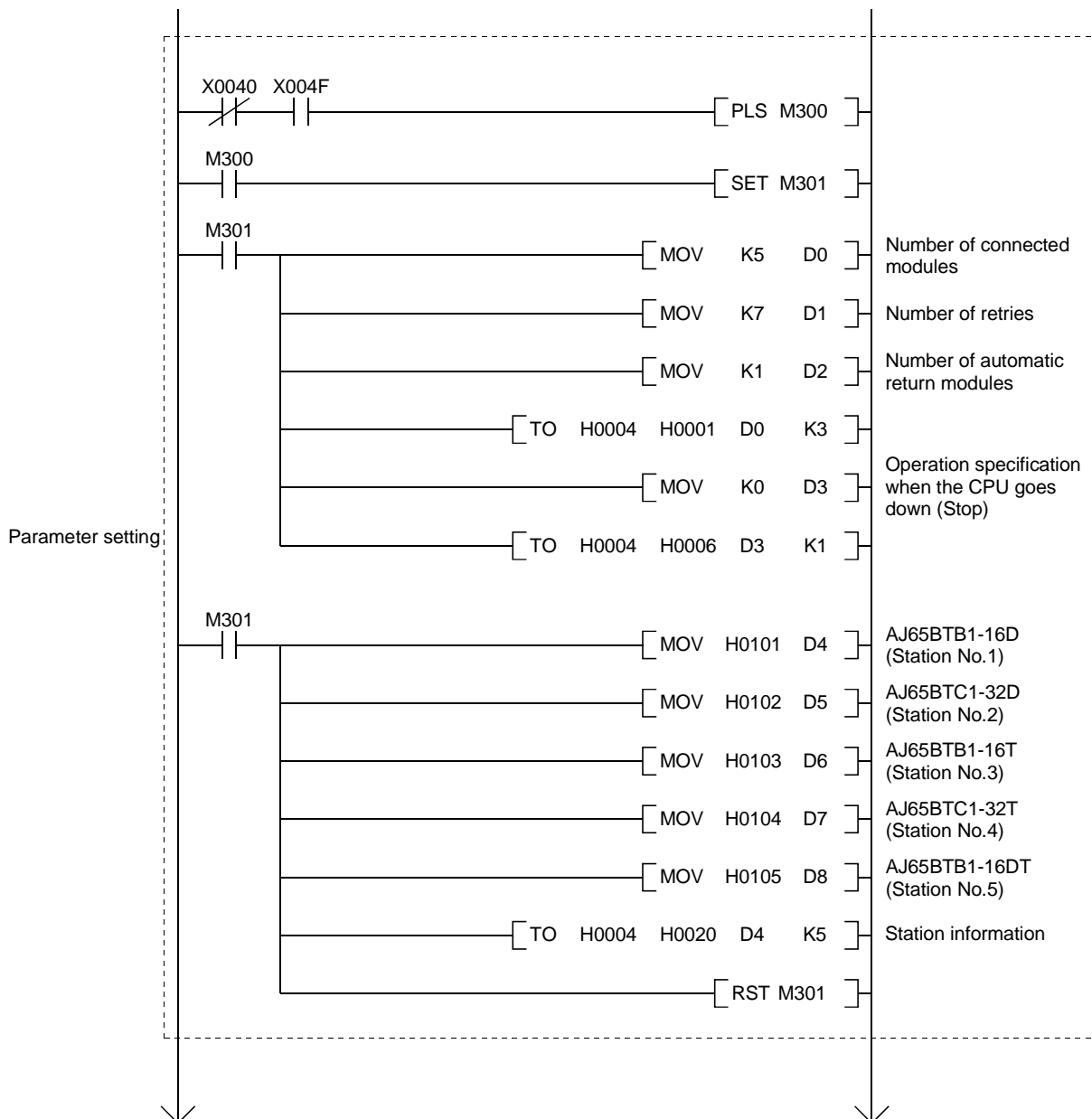


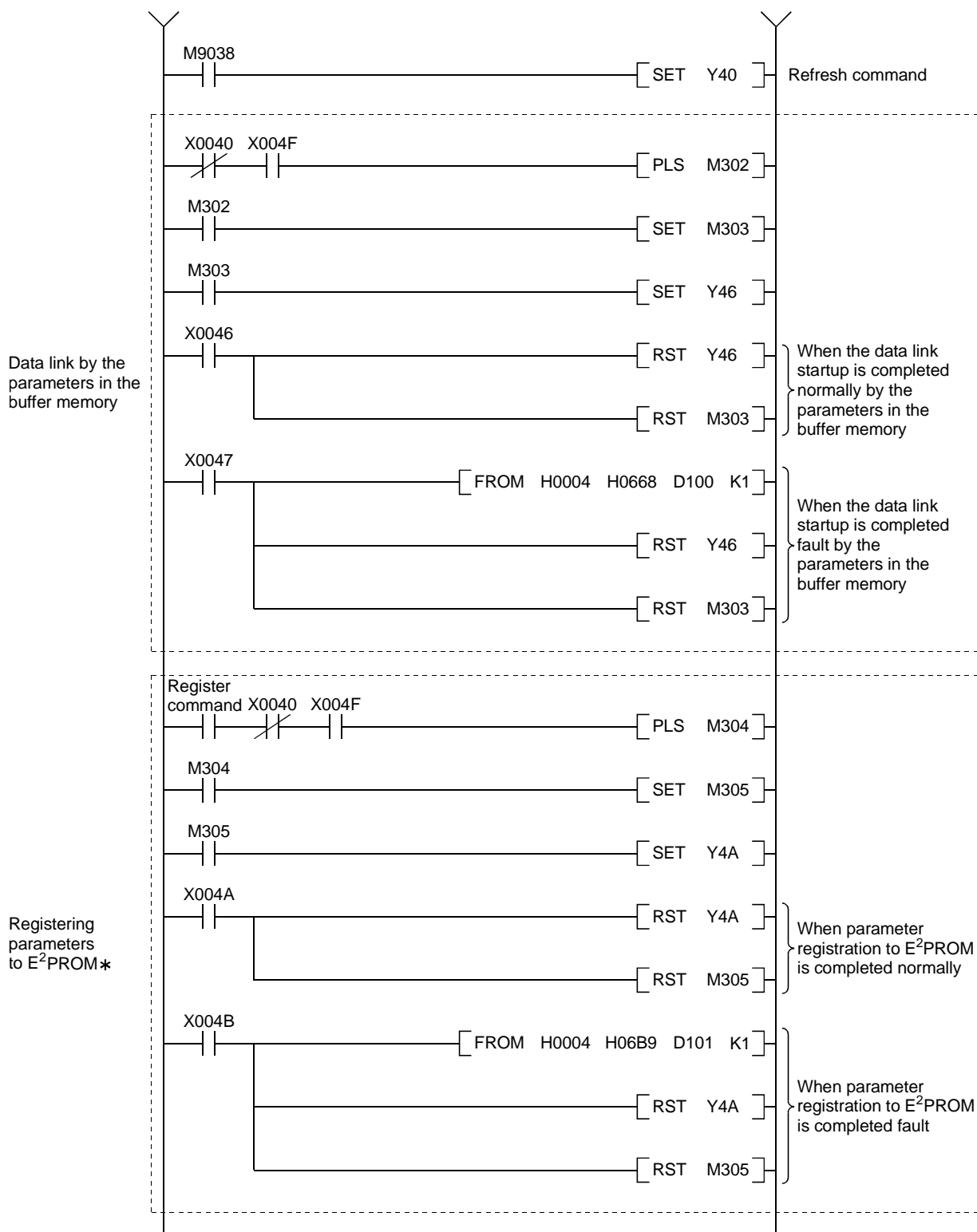
9.2 Creating a Program

9.2.1 Program for parameters

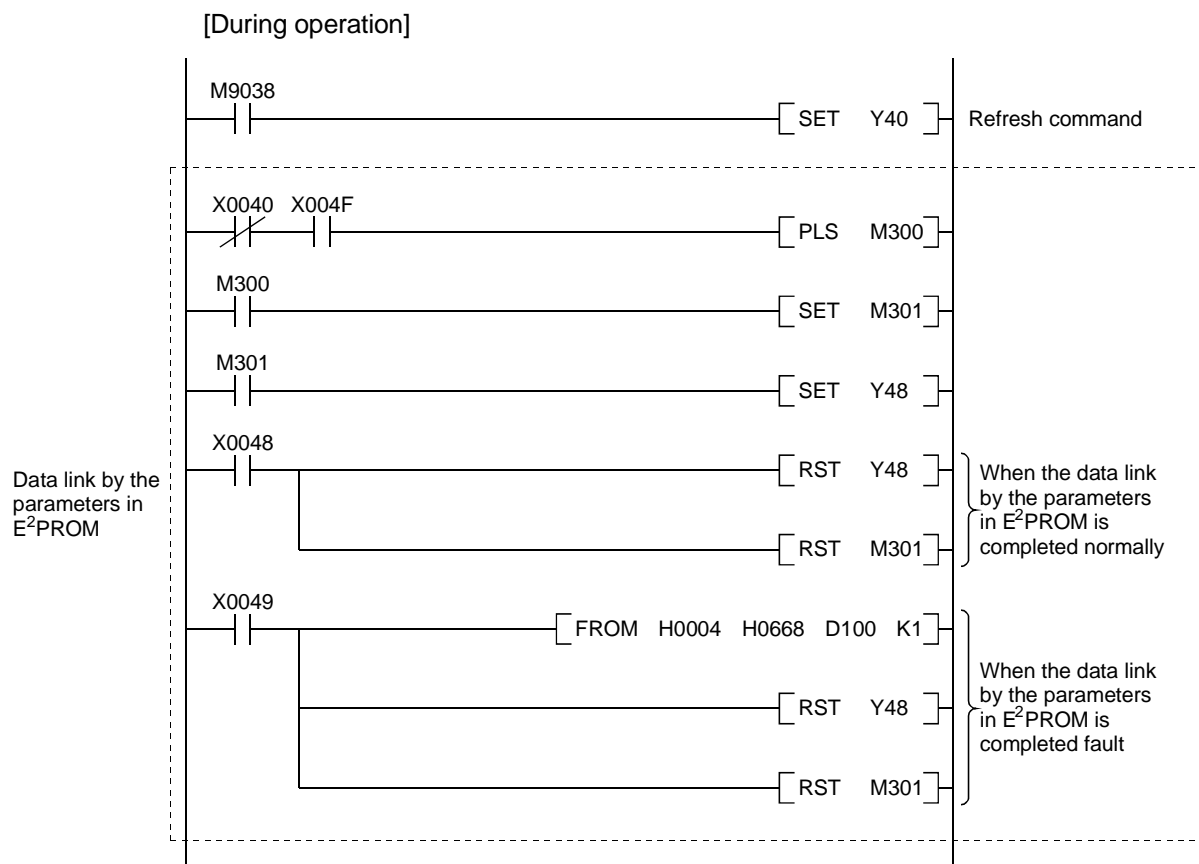
This program automatically initiates the data link when the PC CPU starts running.

[When debugging]





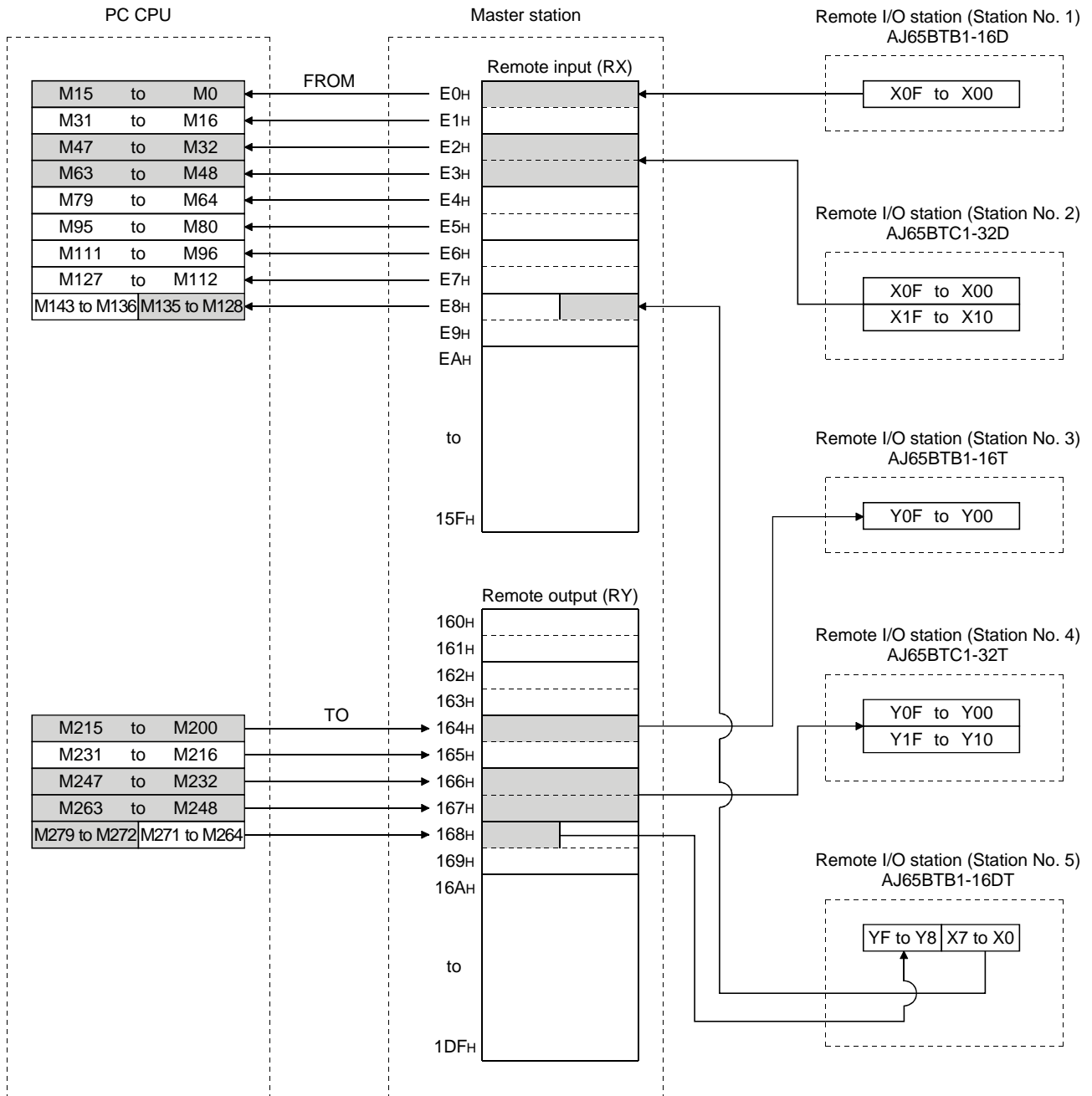
* : Refer to Section 8.2 when using the software version E (manufactured in Aug., 2001) or later of the A1SJ61BT11.



9.2.2 Communication program

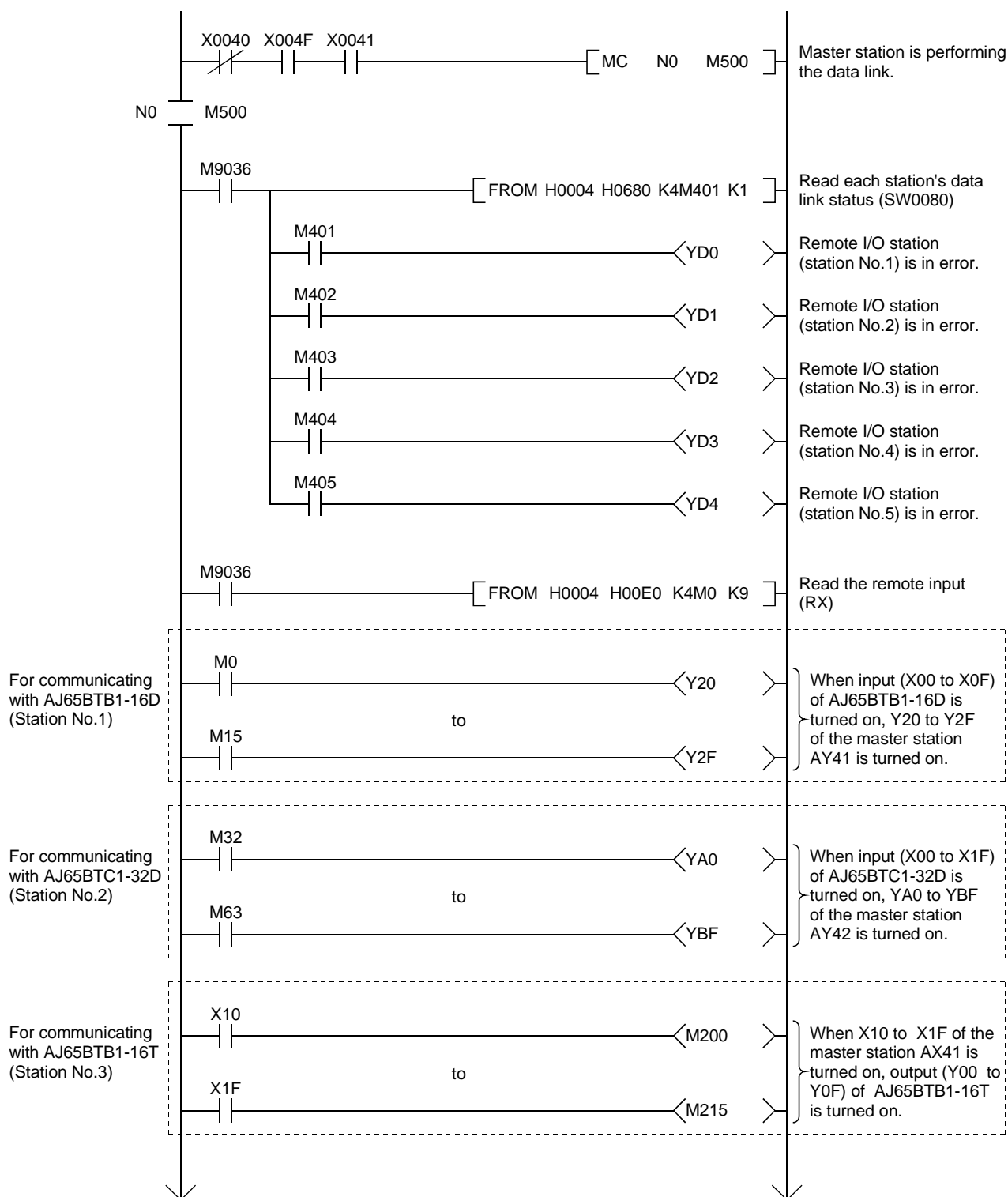
A program to control the remote I/O stations is shown below.

The following configuration of the PC CPU, master station's buffer memory and the remote I/O stations is assumed.



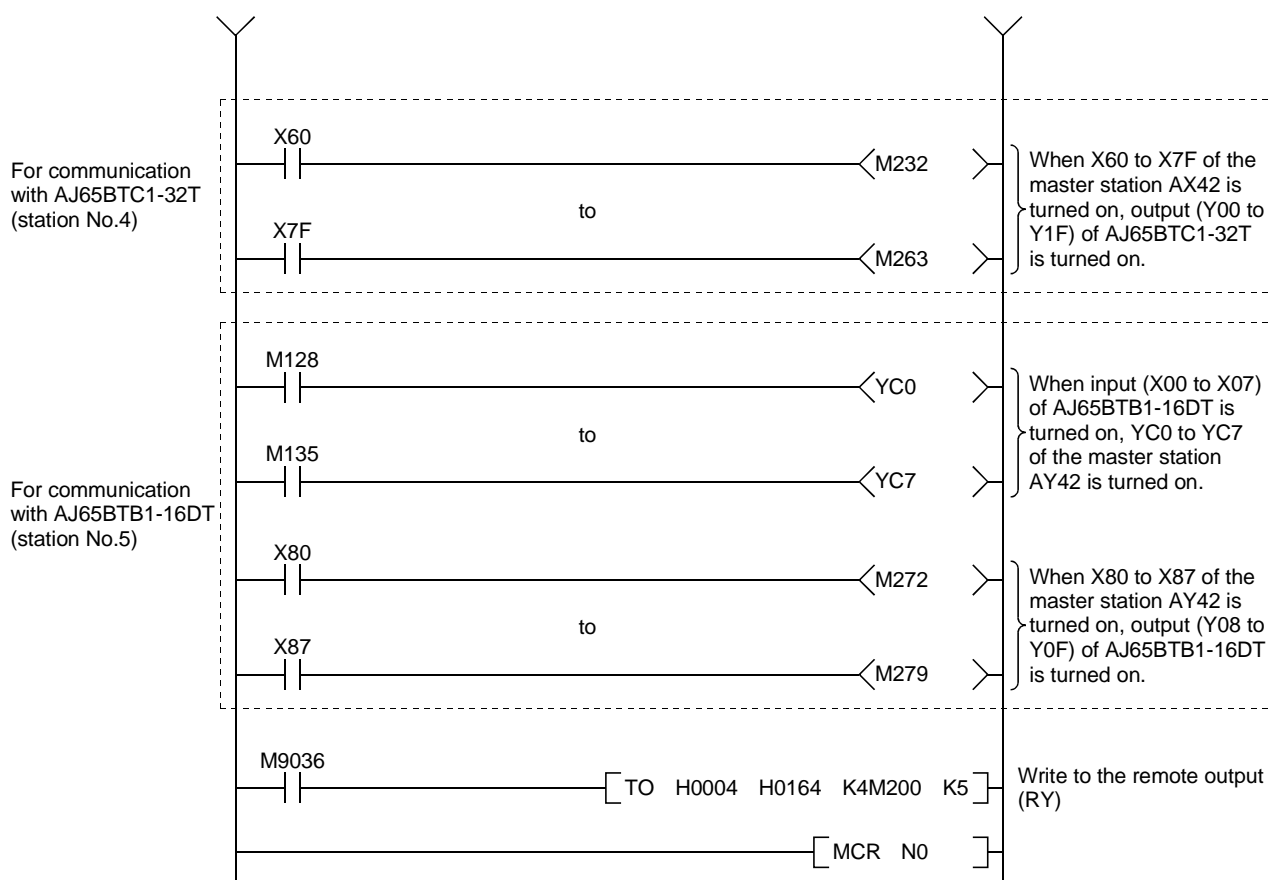
9 COMMUNICATION BETWEEN THE MASTER STATION AND THE REMOTE I/O STATION

MELSEC-A



9 COMMUNICATION BETWEEN THE MASTER STATION AND THE REMOTE I/O STATION

MELSEC-A



9.3 Performing the Data Link

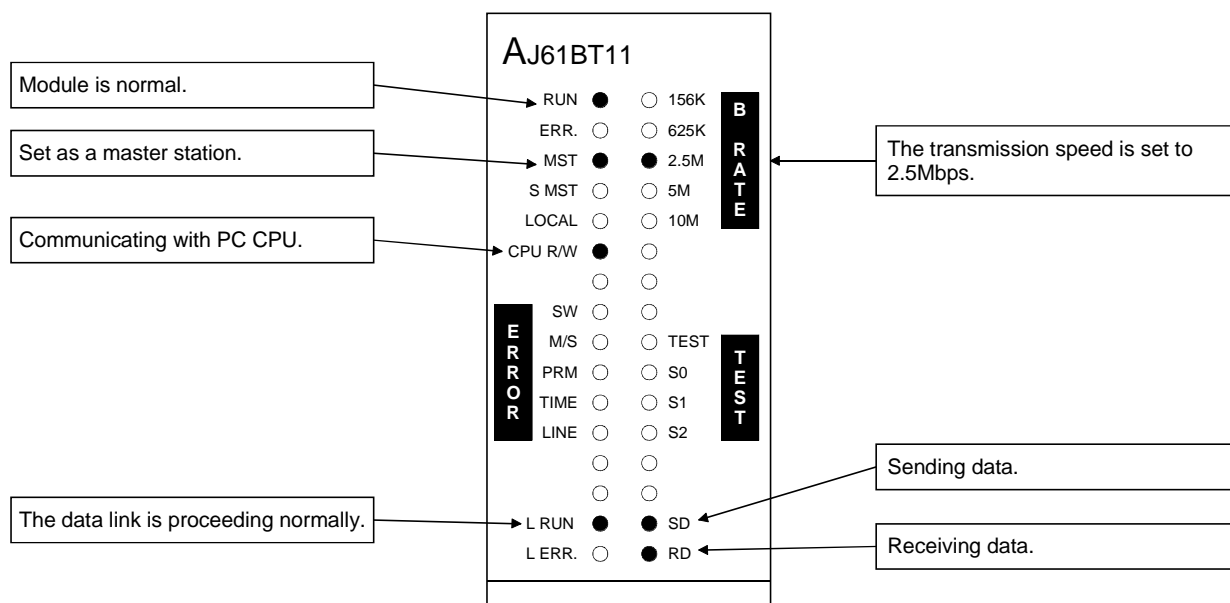
Turn on the power supply of the remote I/O station first, then the power supply of the master station to start the data link.

9.3.1 Confirming the operation by LED display

The following diagram shows the LED display status of the master station and the remote I/O station when the data link is performed normally.

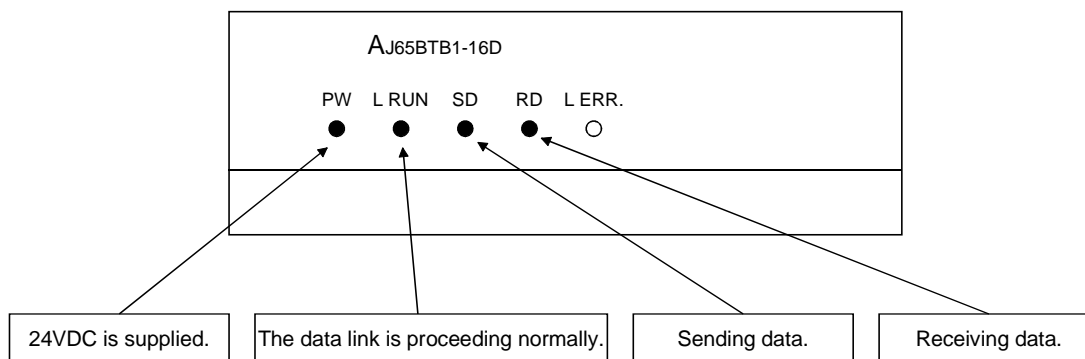
(1) LED display of the master station

Confirm that the LED display shows the following status:



(2) LED display of the remote I/O station

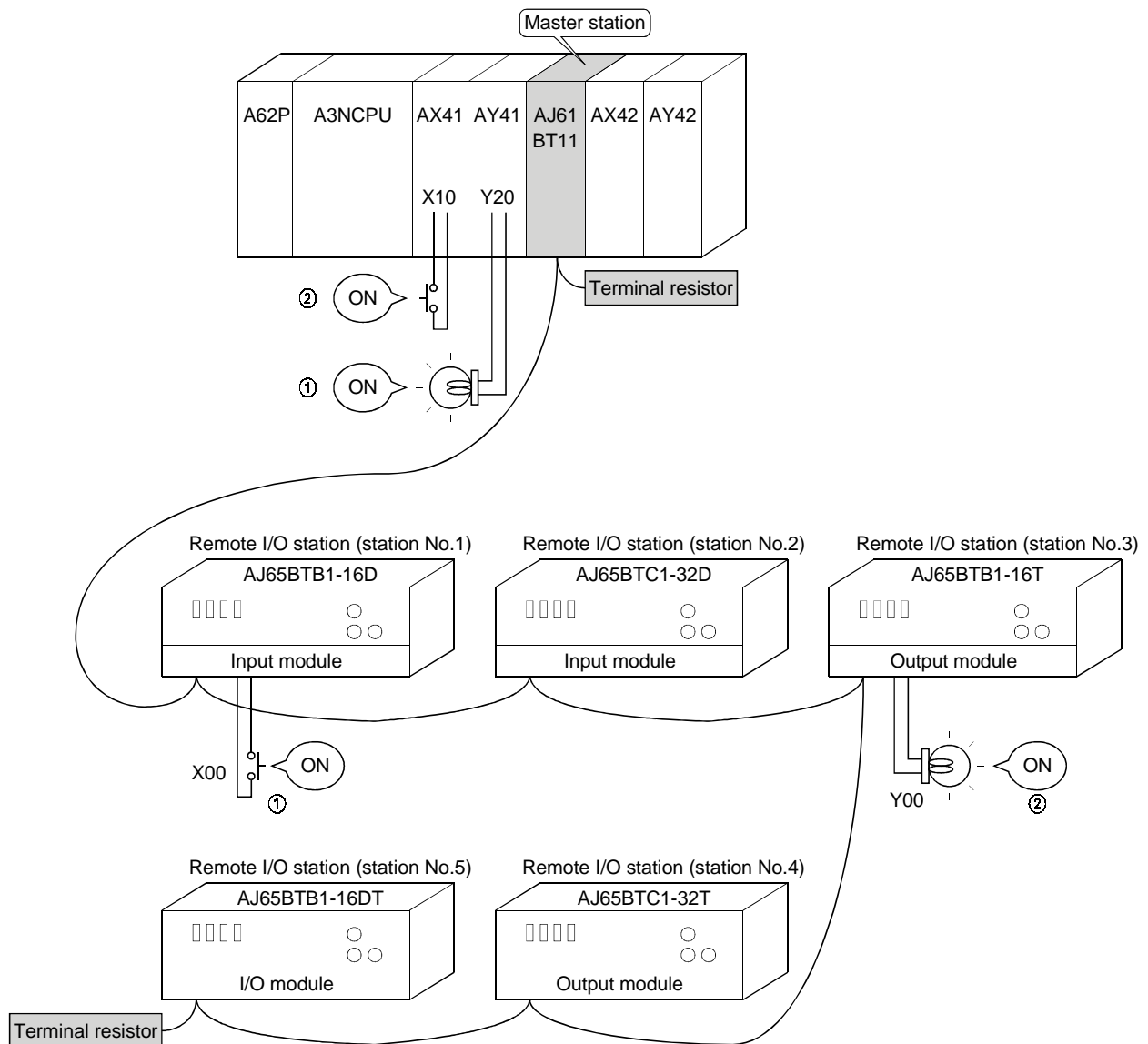
Confirm that the LED display shows the following status:



9.3.2 Confirming the operation by the program

Using the sequence program, confirm that the data link is proceeding normally.

- ① For example, when X00 of the remote I/O station AJ65BTB1-16D (station No.1) is turned on, Y20 (AY41) of the master station is turned on.
- ② When X10 (AX41) of the master station is turned on, Y00 of the remote I/O station AJ65BTB1-16T (station No.3) is turned on.



MEMO

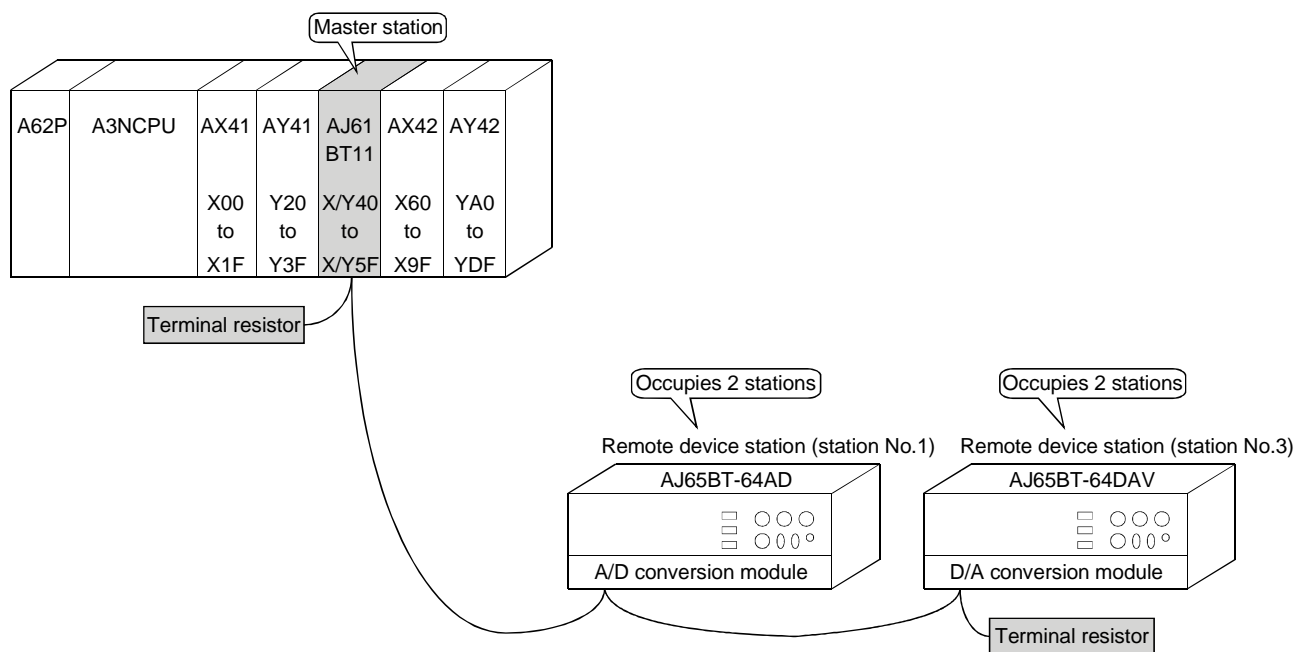
[illegible]

10. Communication Between the Master Station and the Remote Device Station

How to set, program, and confirm the operation of the module is described using a system configuration example.

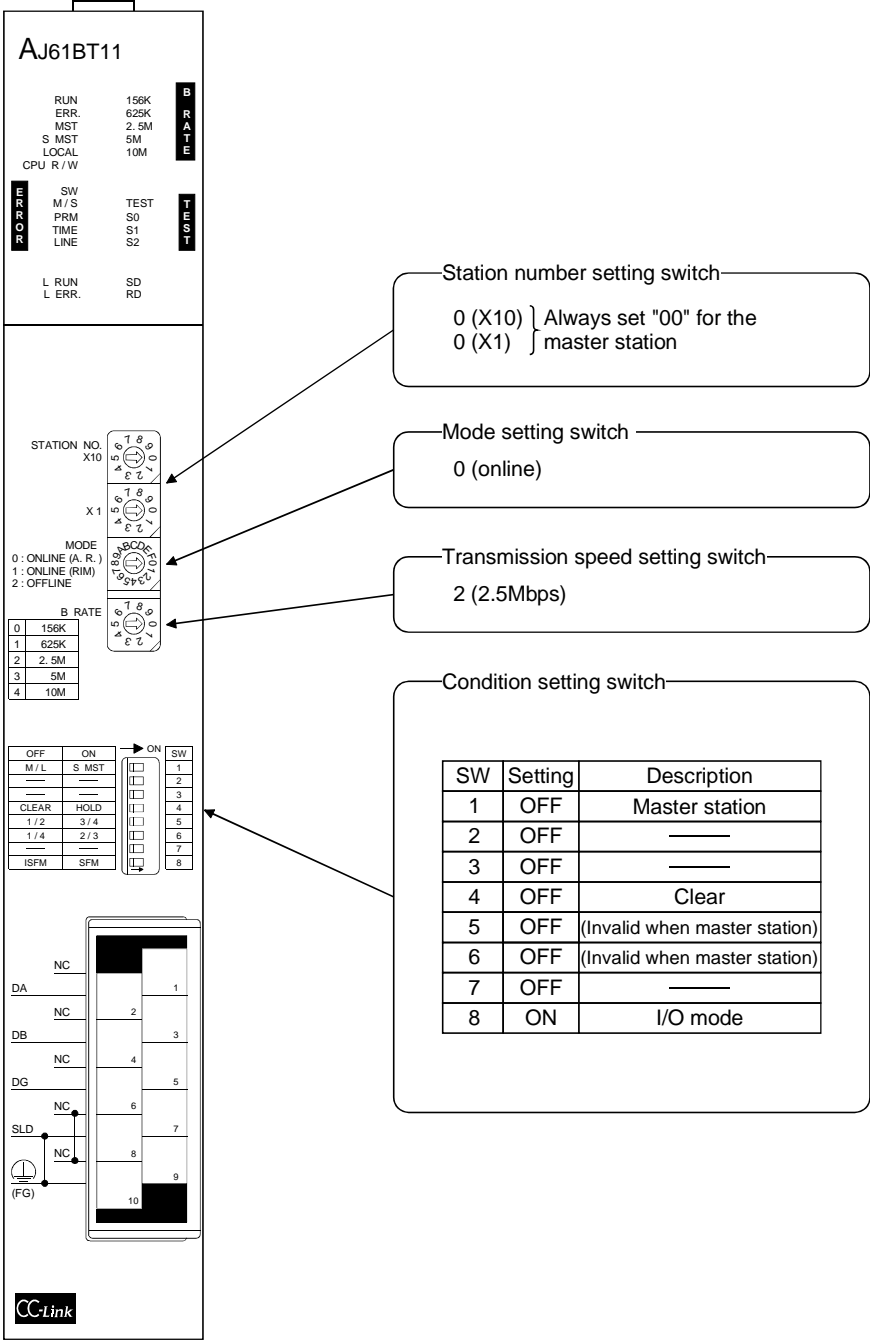
10.1 System Configuration

A system with two remote device stations is used as an example.



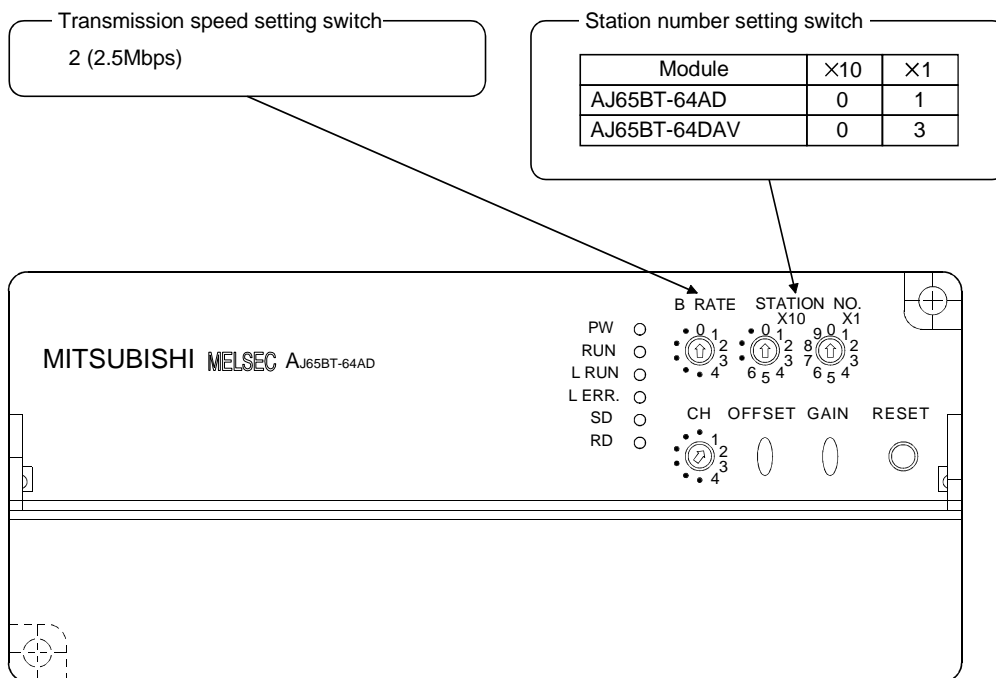
10.1.1 Setting of the master station

The settings of the switches on the master station are shown below:



10.1.2 Setting of the remote device station

The settings of the switches on the remote device station are shown below:

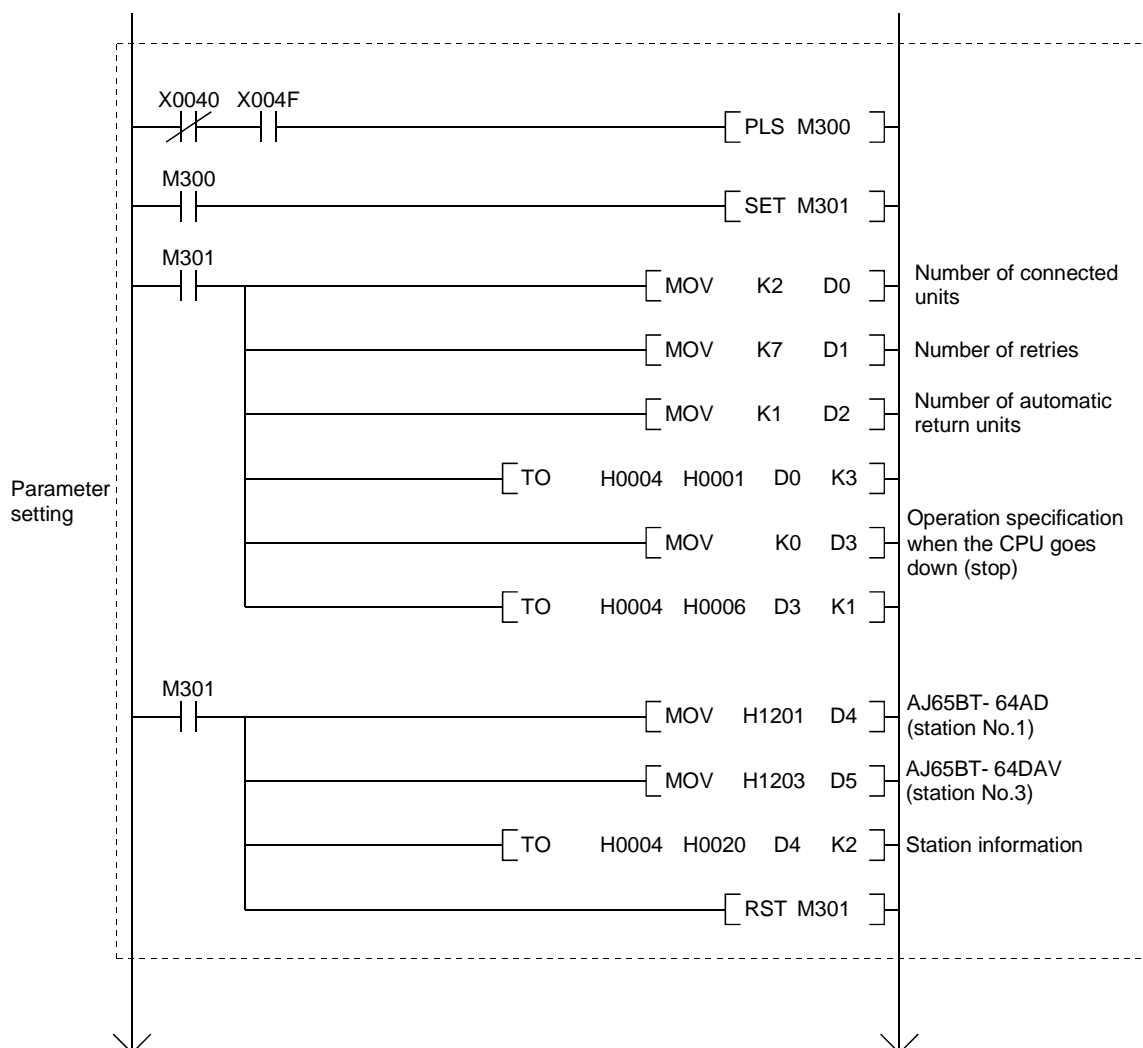


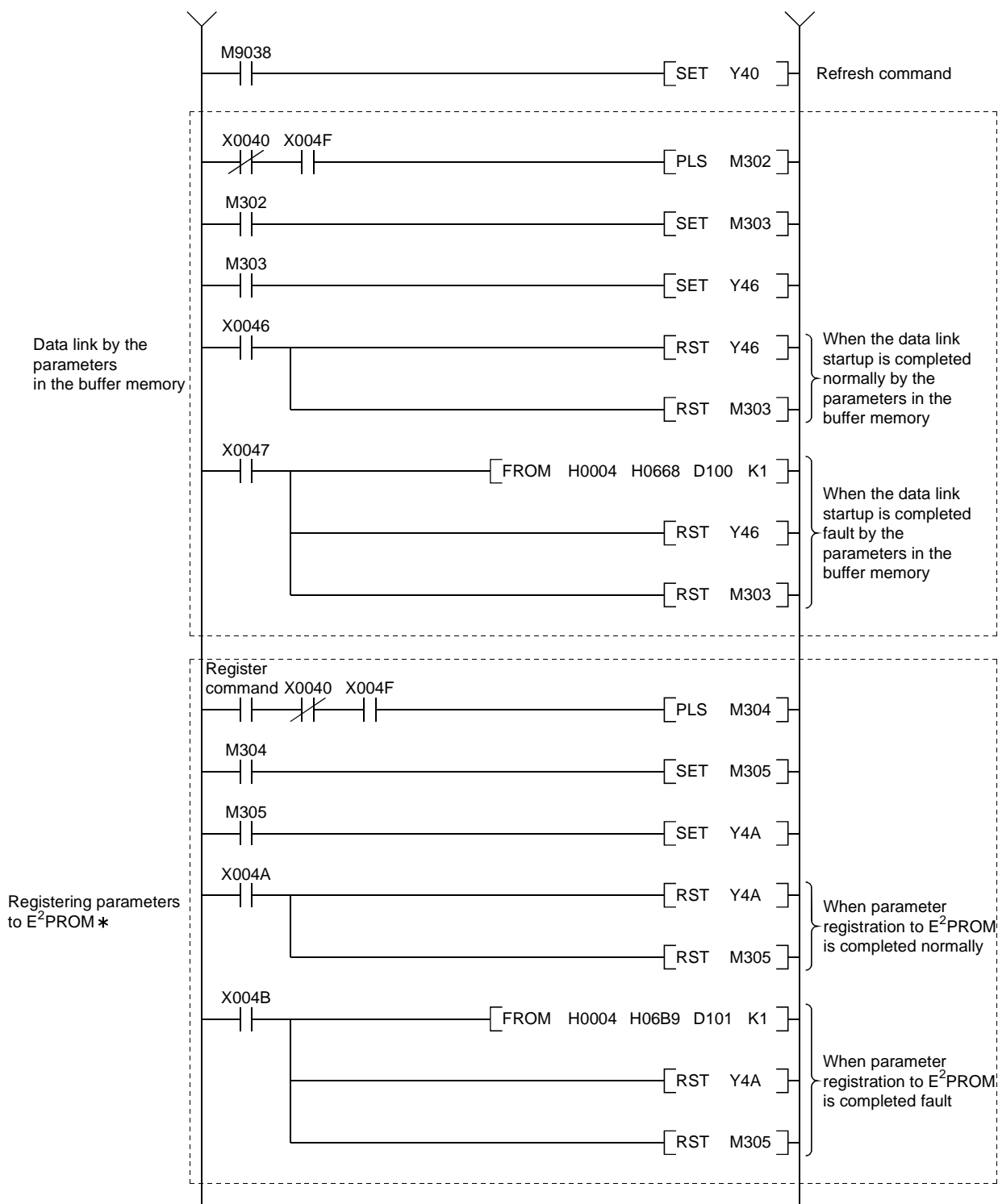
10.2 Creating a Program

10.2.1 Program for parameters

This program automatically initiates the data link when the PC CPU starts running.

[When debugging]





* : Refer to Section 8.2 when using the software version E (manufactured in Aug., 2001) or later of the A1SJ6BT11.



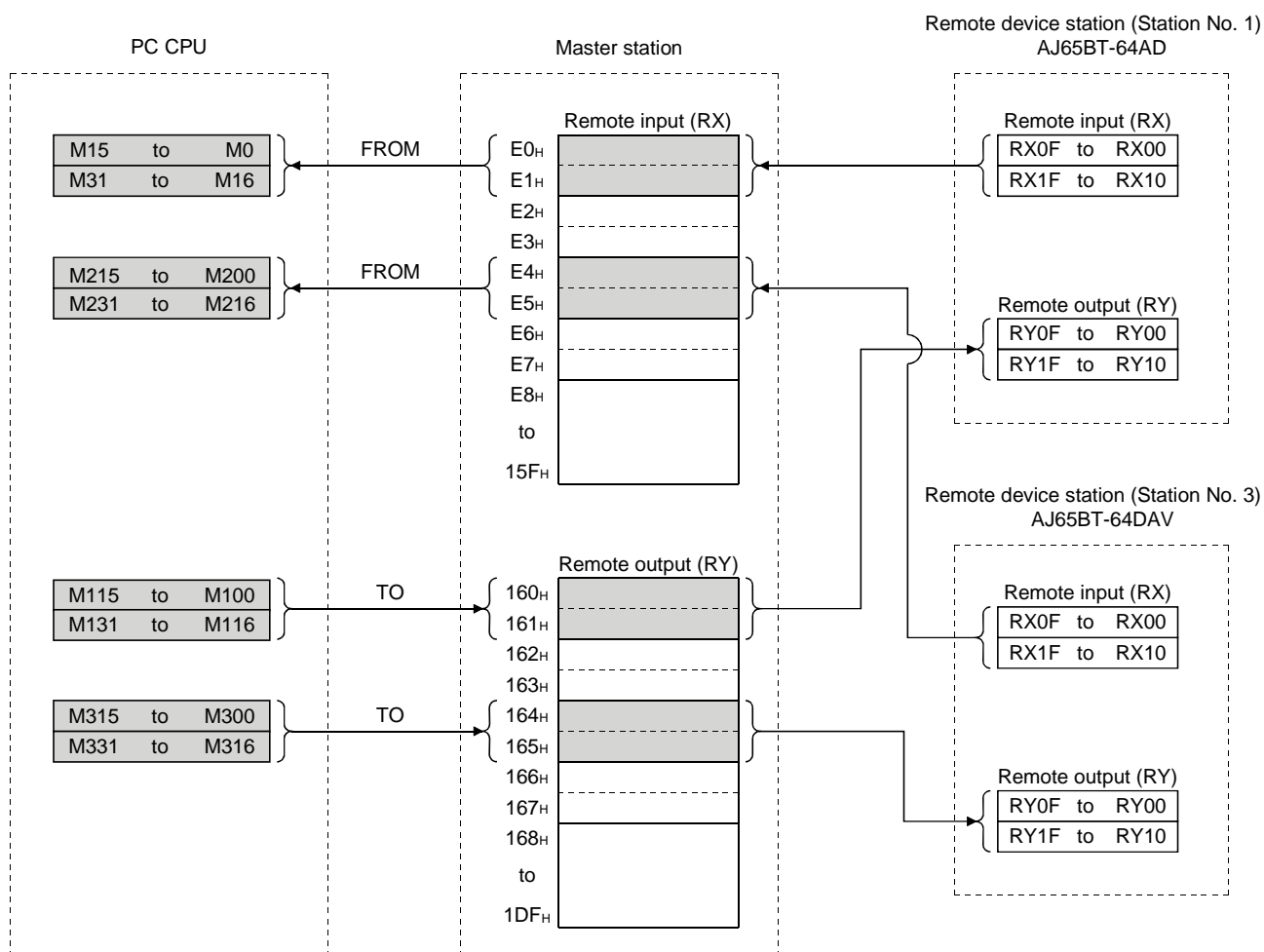
10.2.2 Communication program

A program to control the remote device stations is shown below.

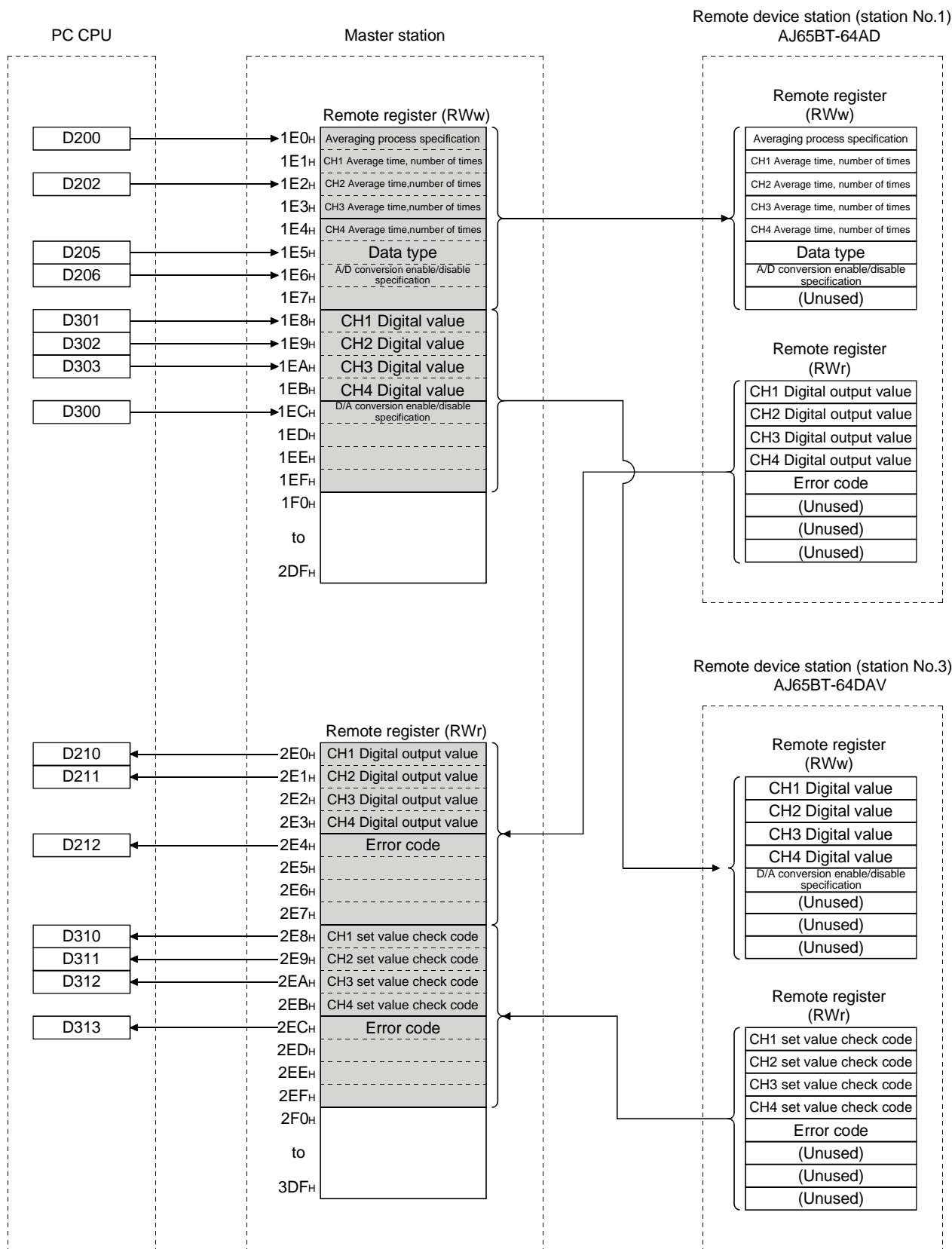
The following configuration of the PC CPU, master station's buffer memory and the remote device stations is assumed.

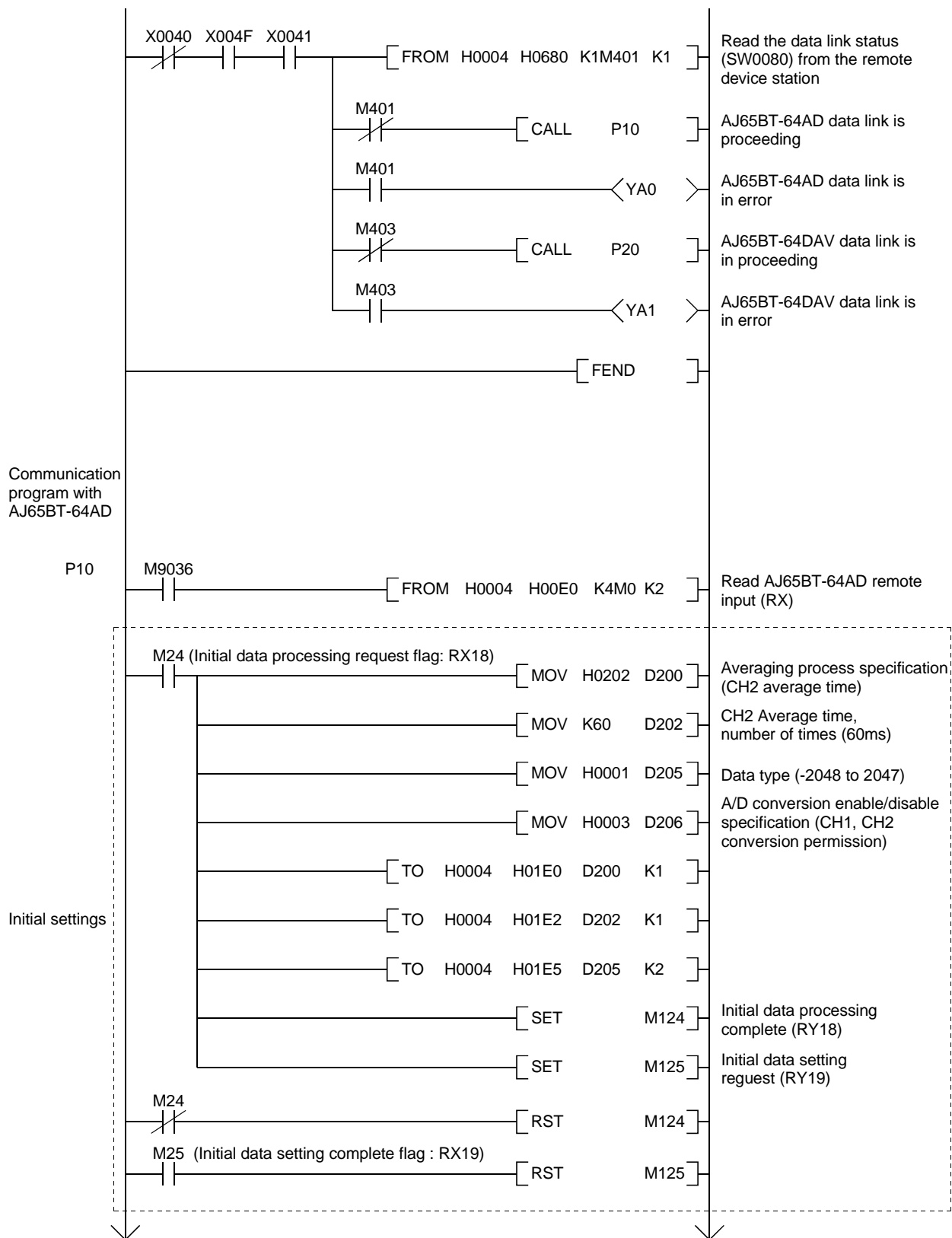
Refer to each module's User's Manuals (Detailed Edition) for details.

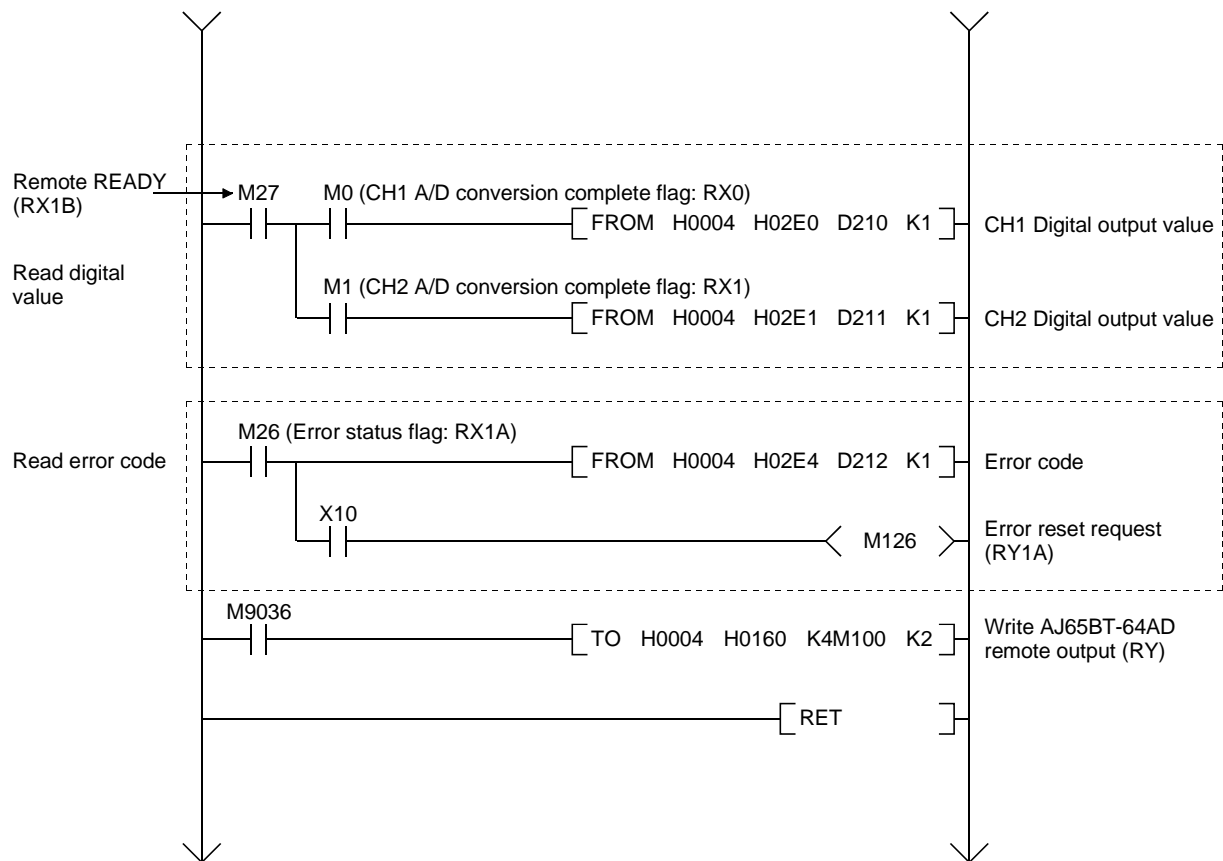
[Remote input (RX), remote output (RY)]



[Remote register (RWw, RWr)]

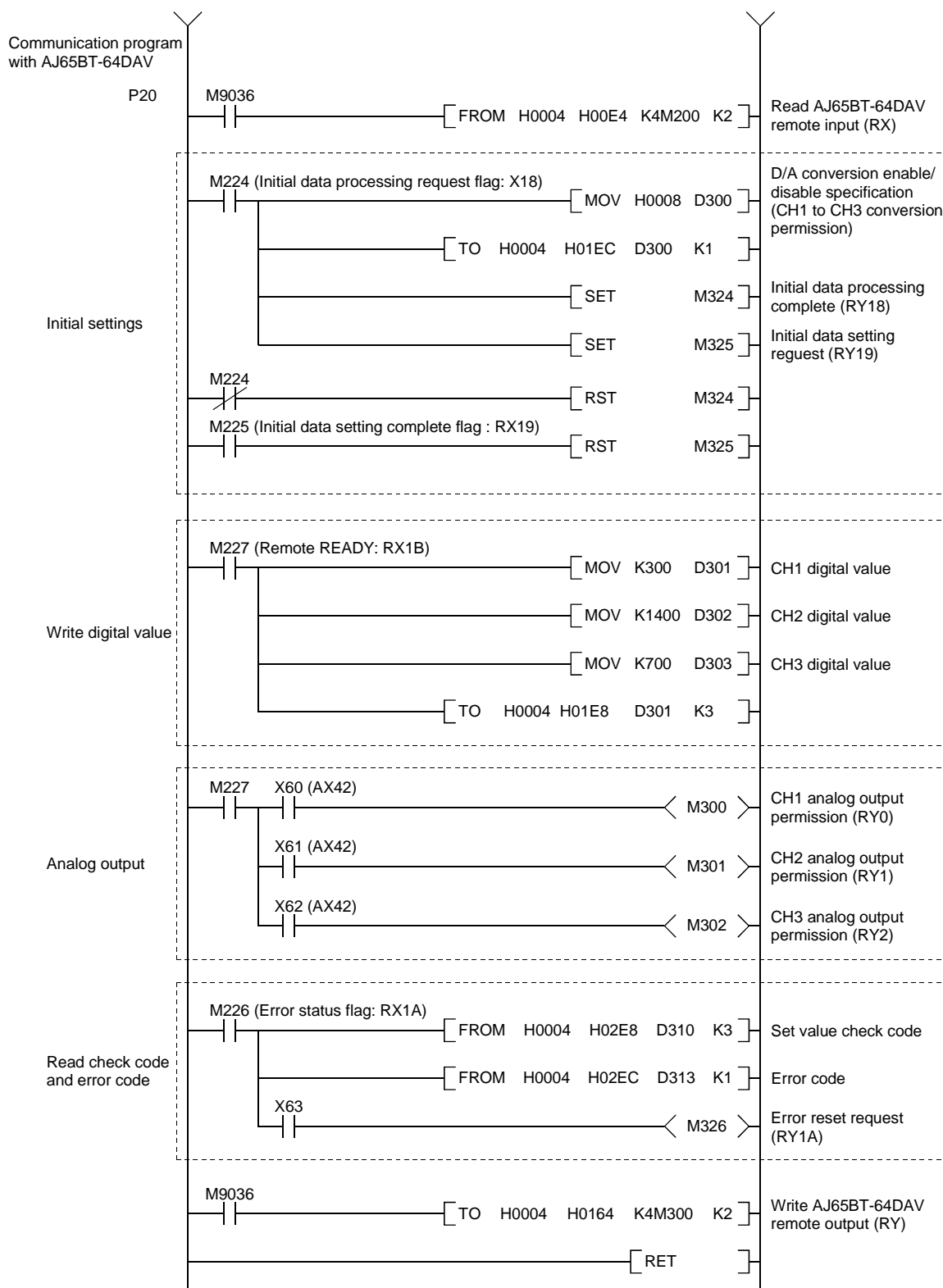






10 COMMUNICATION BETWEEN THE MASTER STATION AND THE REMOTE DEVICE STATION

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10.3 Performing the Data Link

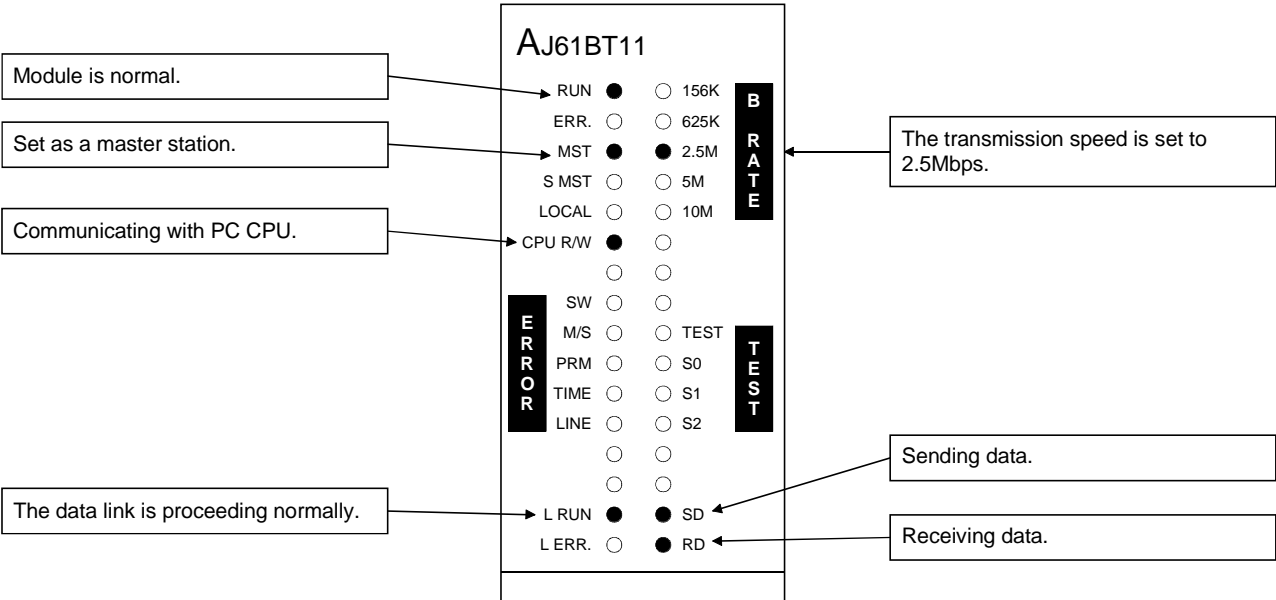
Turn on the power supply of the remote device station first, then the power supply of the master station to start the data link.

10.3.1 Confirming the operation by LED display

The following diagram shows the LED display status of the master station and the Remote device station when the data link is performed normally.

(1) LED display of the master station

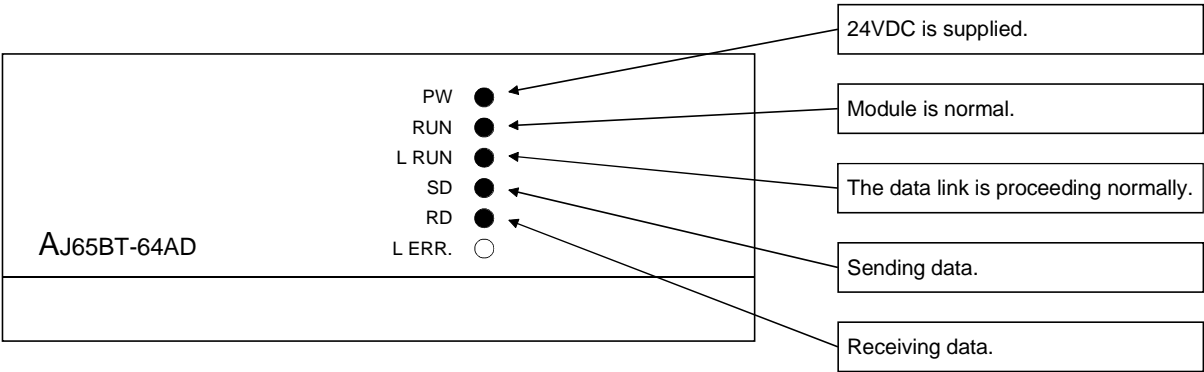
Confirm that the LED display shows the following status:



(2) LED display of the remote device station

Confirm that the LED display shows the following status:

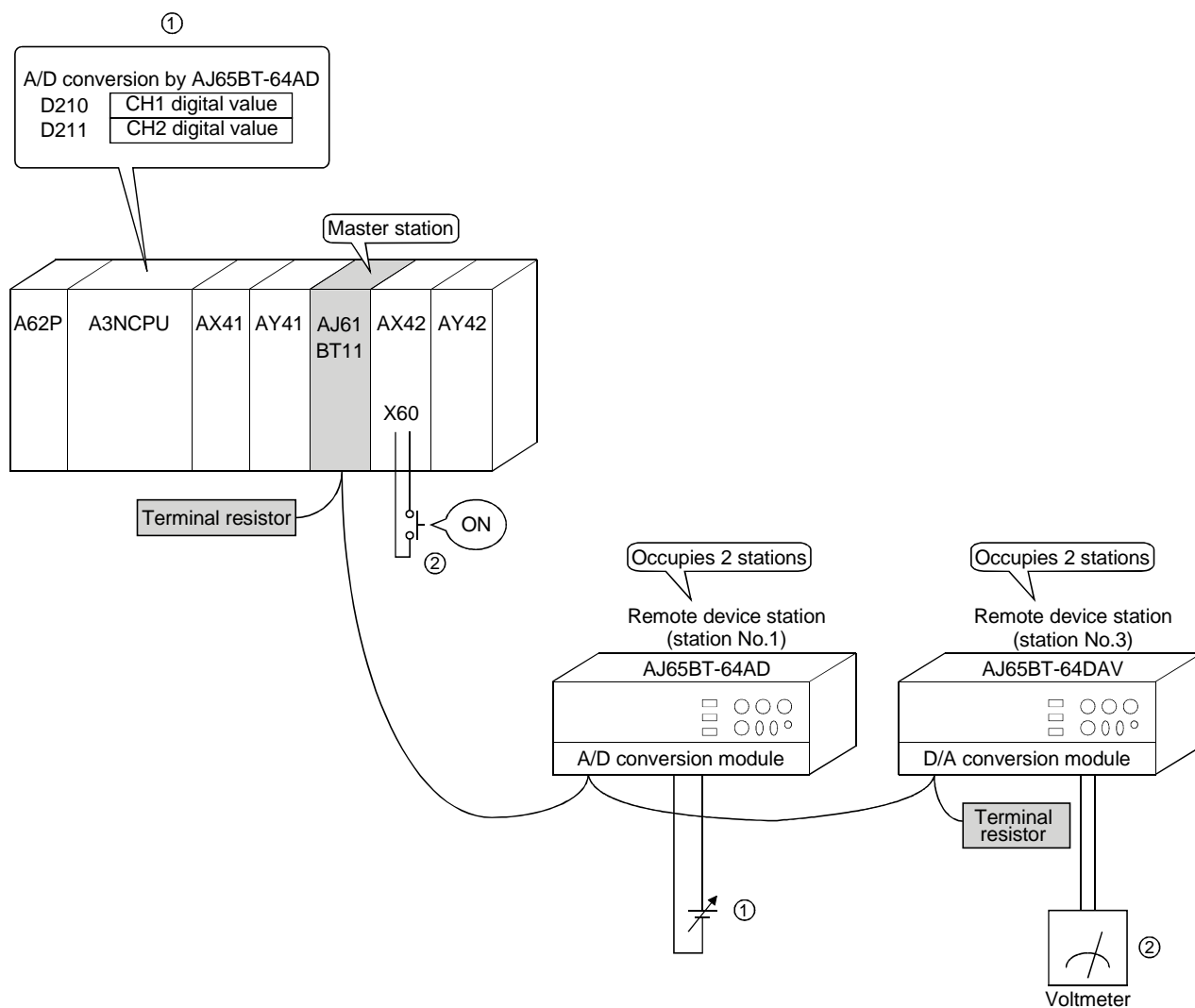
The LED display in AJ65BT-64AD and AJ65BT-64DAV are the same.



10.3.2 Confirming the operation by the program

Using the sequence program, confirm that the data link is proceeding normally.

- ① The digital value which was converted by AJ65BT-64AD is stored in D210 (CH1 digital value) and D211 (CH2 digital value).
- ② When X60 is turned on, the output voltage appears on CH1 of AJ65BT-64DAV.



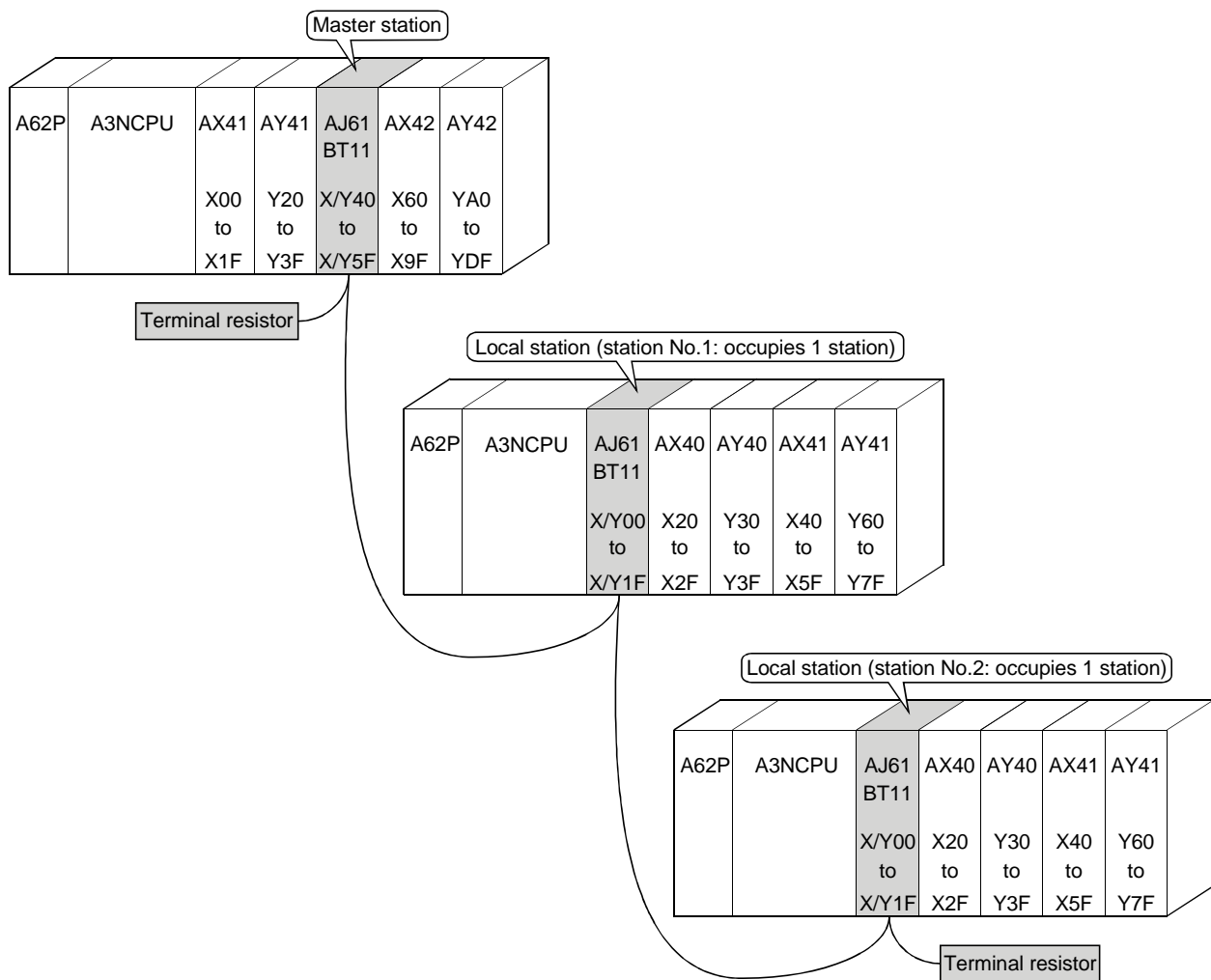
[illegible]

11. Communication Between the Master Station and the Local Station

How to set, program, and confirm the operation of the module is described using a system configuration example.

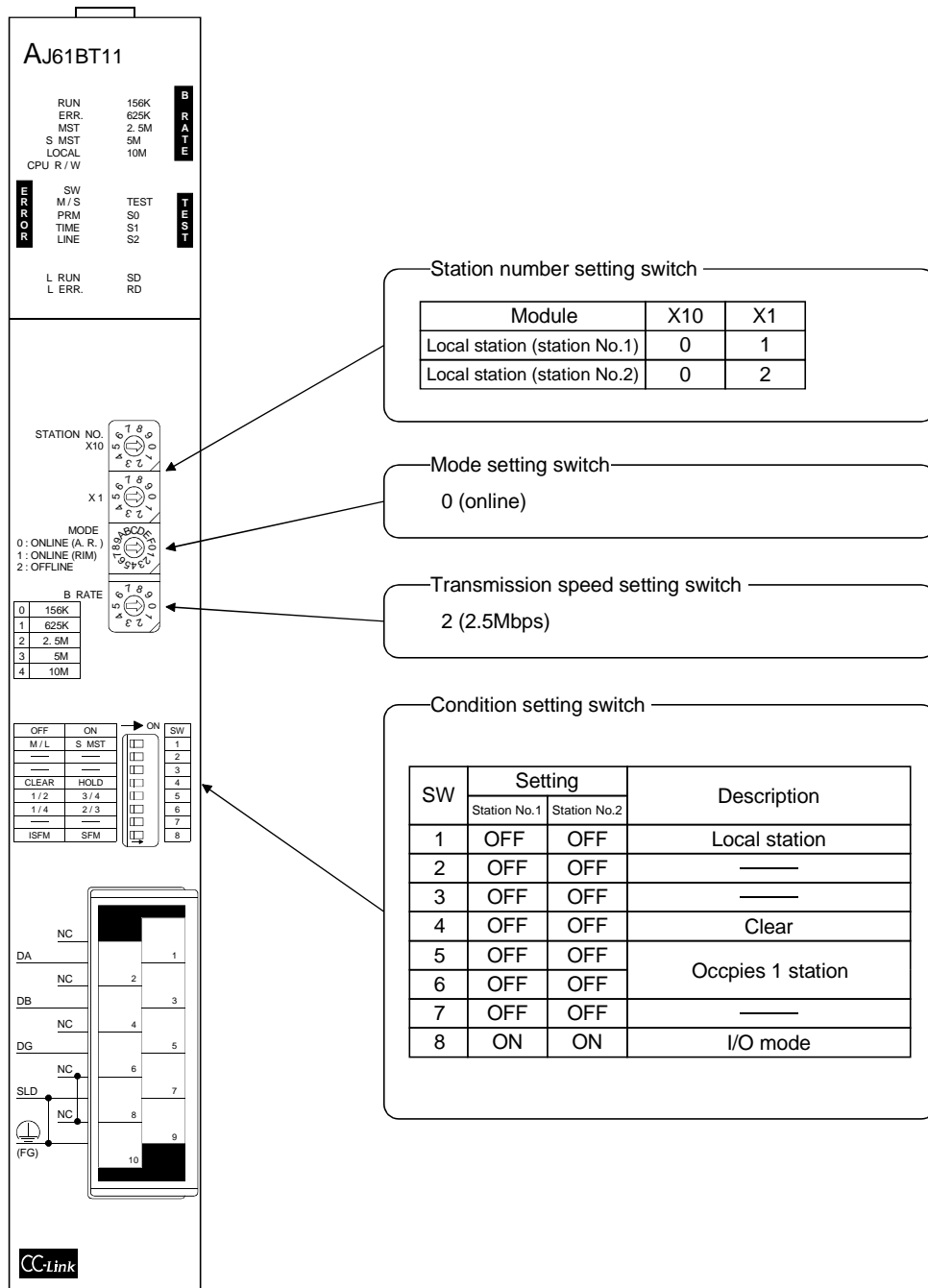
11.1 System Configuration

A system with two local stations is connected as an example.



11.1.2 Setting of the local station

The settings of the switches on the local station are shown below:



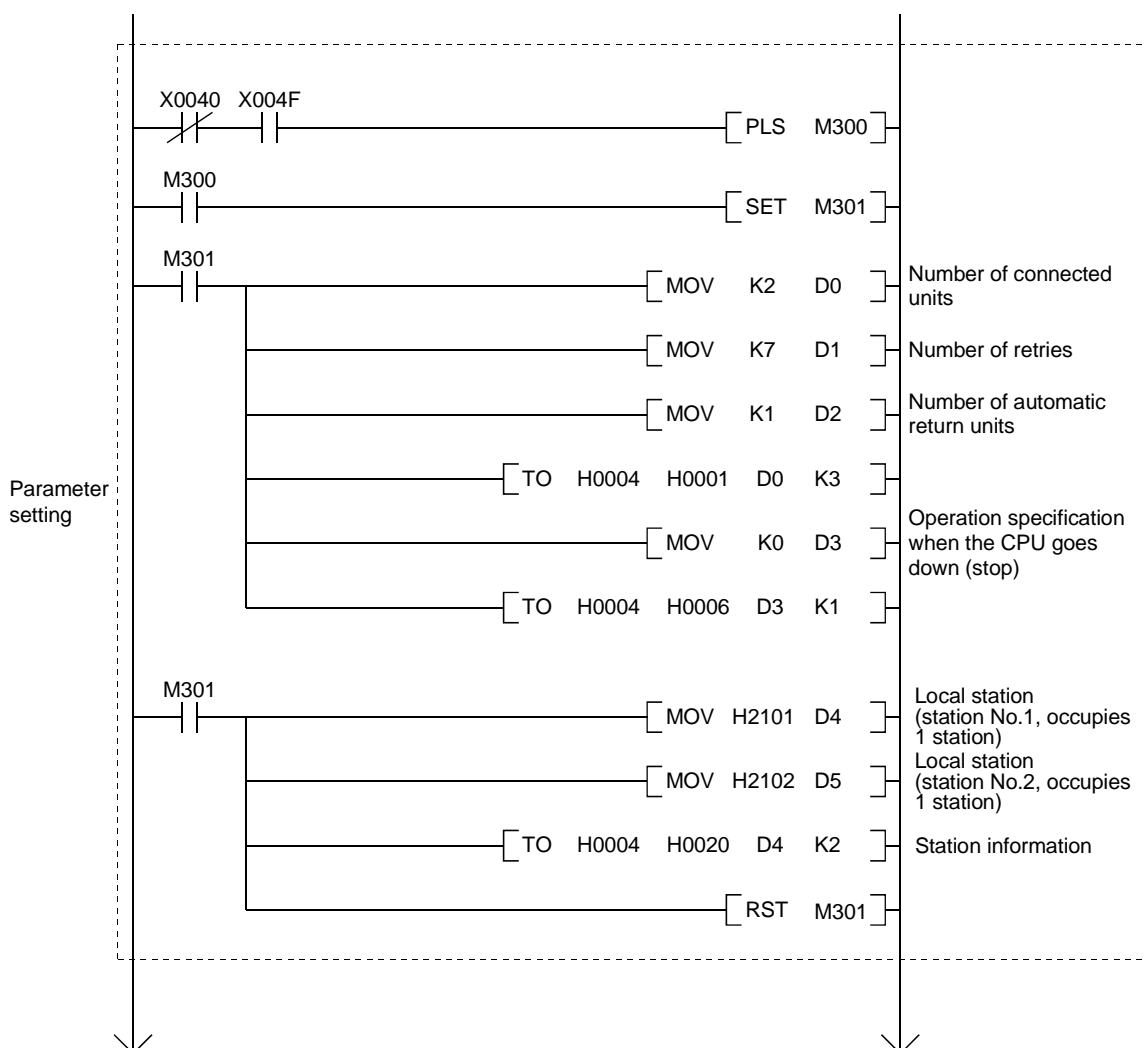
11.2 Creating a Program

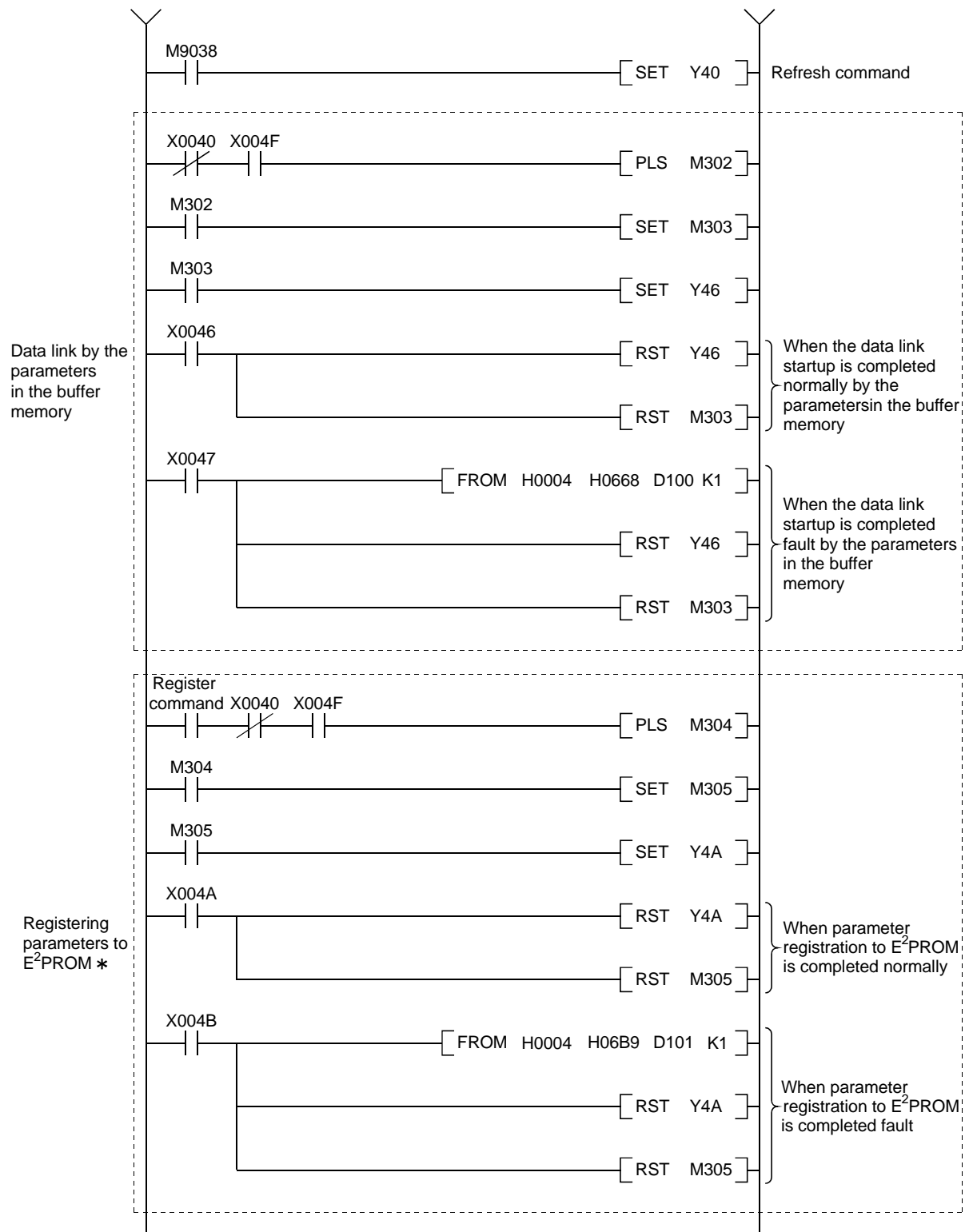
11.2.1 Program for the master station

(1) Program for parameter

This program automatically initiates the data link when the PC CPU starts running.

[When debugging]





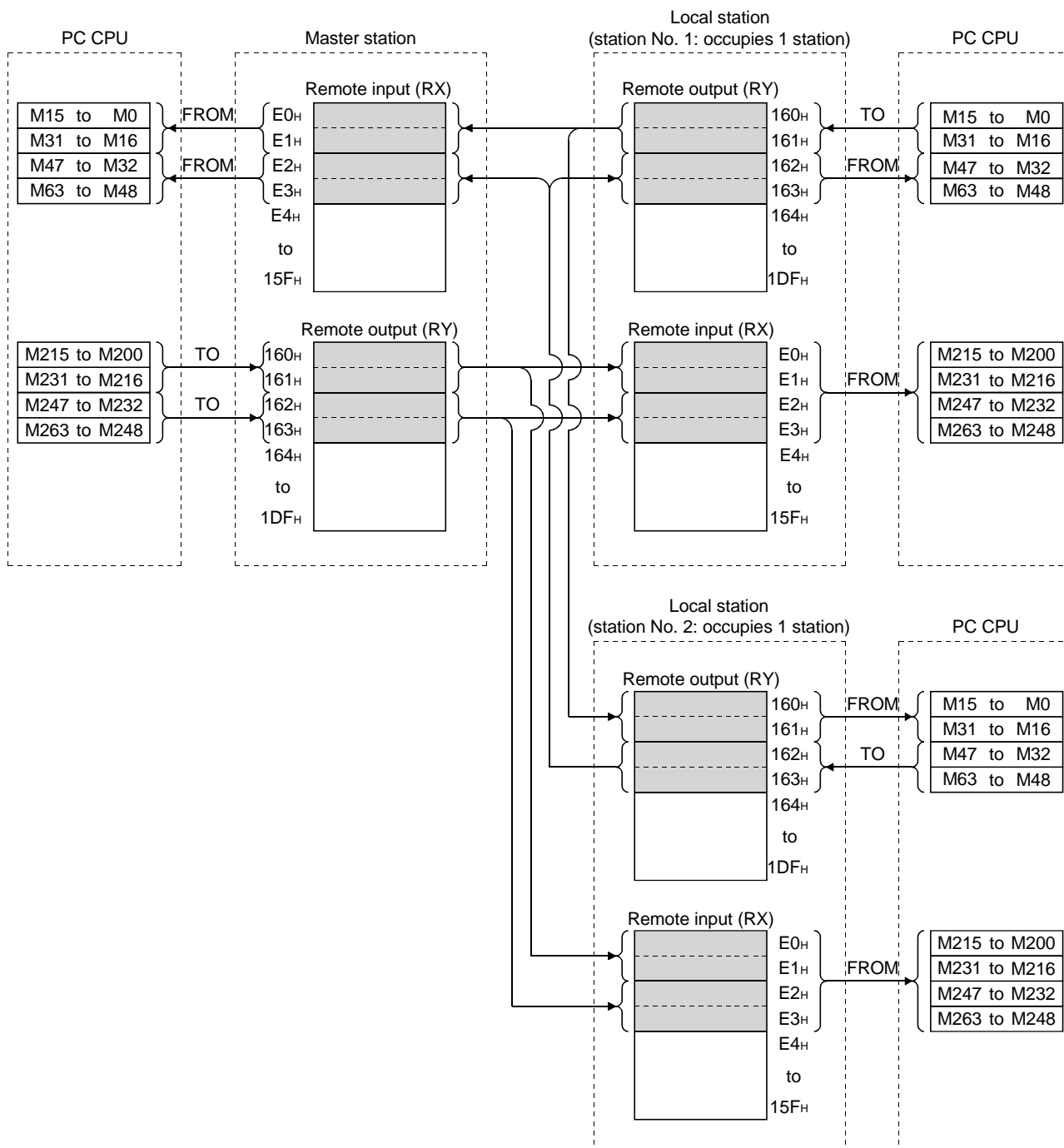
* : Refer to Section 8.2 when using the software version E (manufactured in Aug., 2001) or later of the A1SJ61BT11.



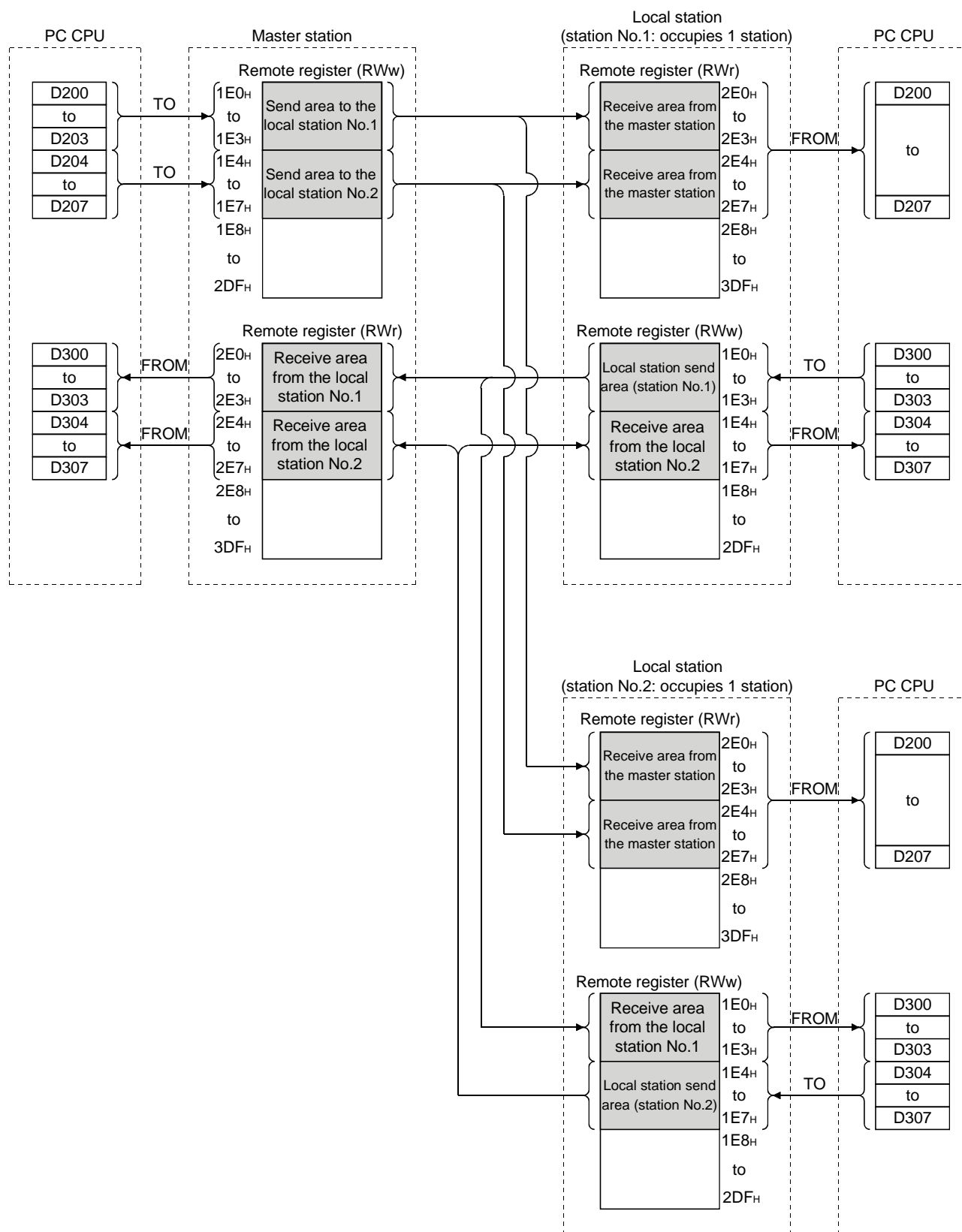
(2) Communication program

The following configuration of the PC CPU device, master station's buffer memory and local station's buffer memory is assumed.

[Remote input (RX), remote output (RY)]



[Remote register (RWw, RWr)]





11.2.2 Local station program

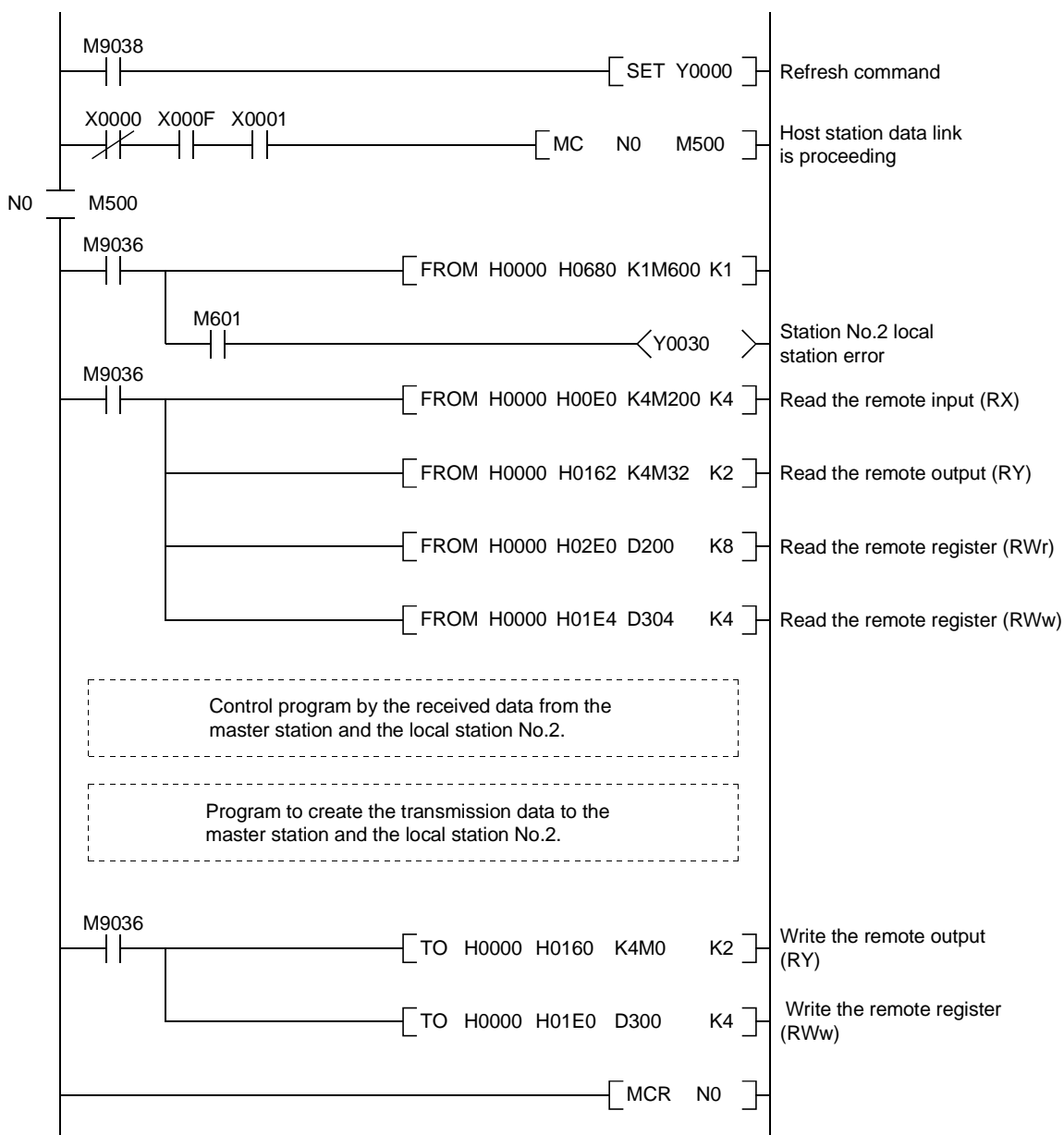
(1) Program for parameters

Local stations do not need this.

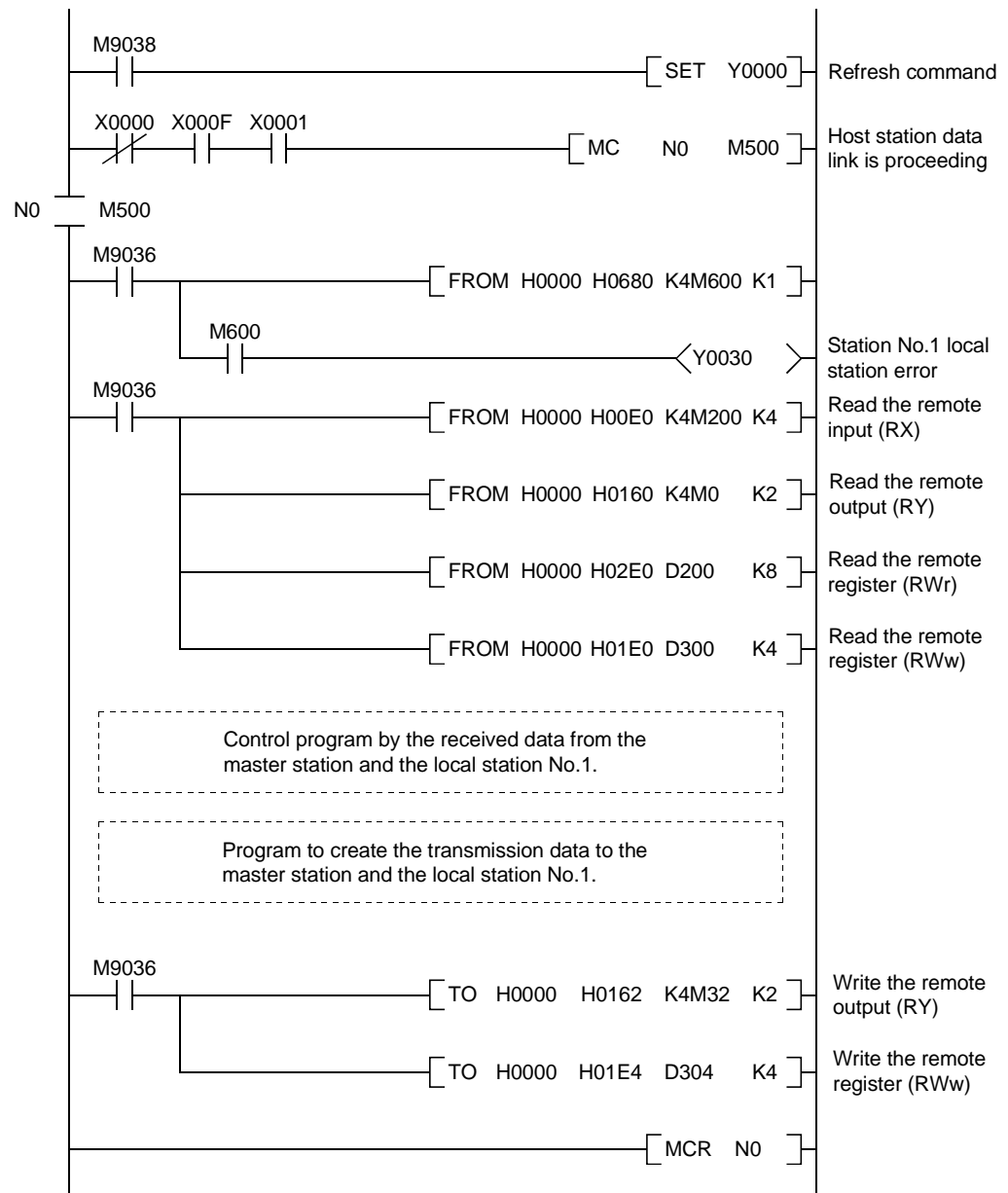
(2) Program for communication

Refer to Section 11.2.1 (2), for the relationship between the PC CPU device, master station's buffer memory, and the local station's buffer memory.

(a) Local station No.1



(b) Local station No.2



11.3 Performing the Data Link

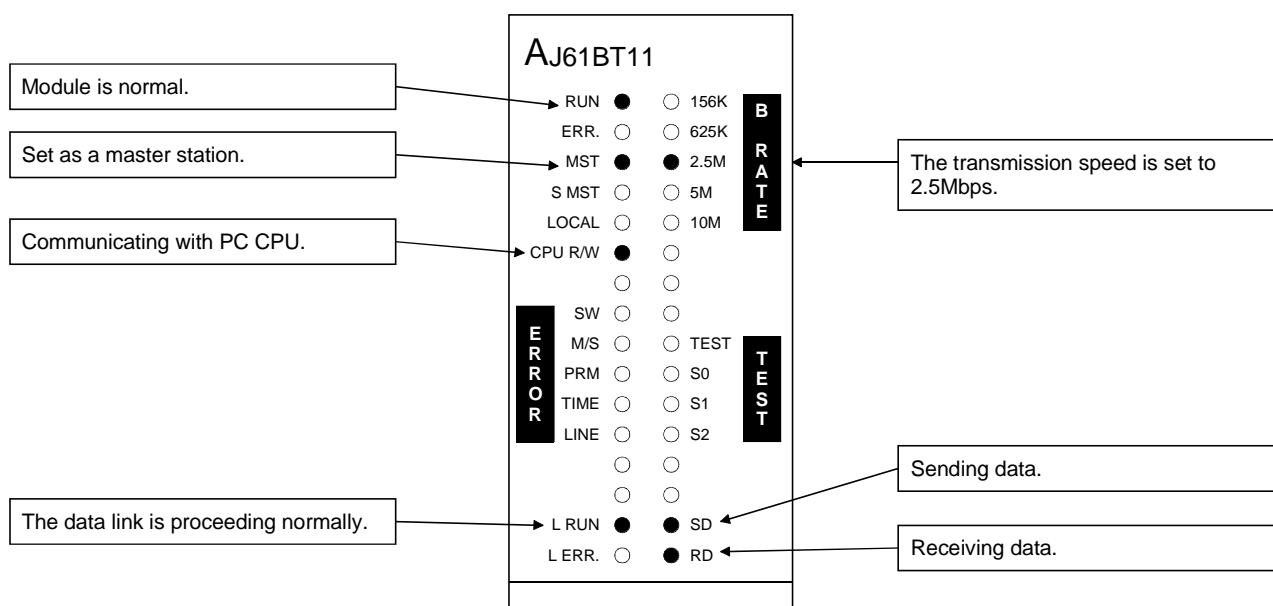
Turn on the power supply of the local station first, then the power supply of the master station to start the data link.

11.3.1 Confirming the operation by LED display

The following diagram shows the LED display status of the master station and the local station when the data link is performed normally.

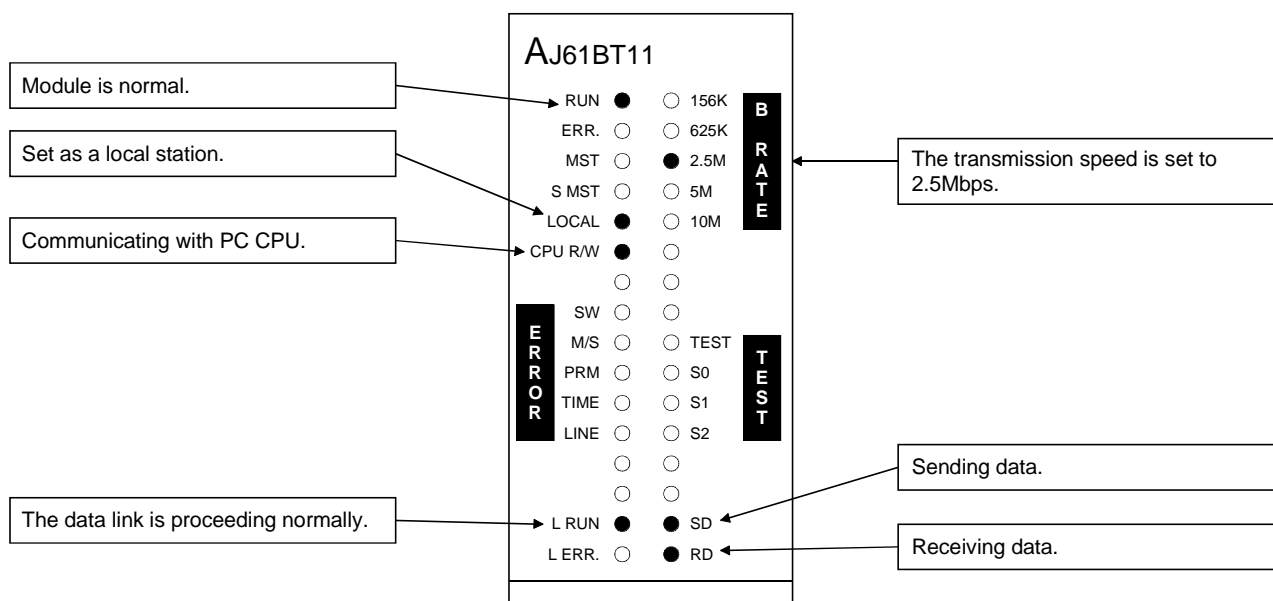
(1) LED display of the master station

Confirm that the LED display shows the following status:



(2) LED display of the local station

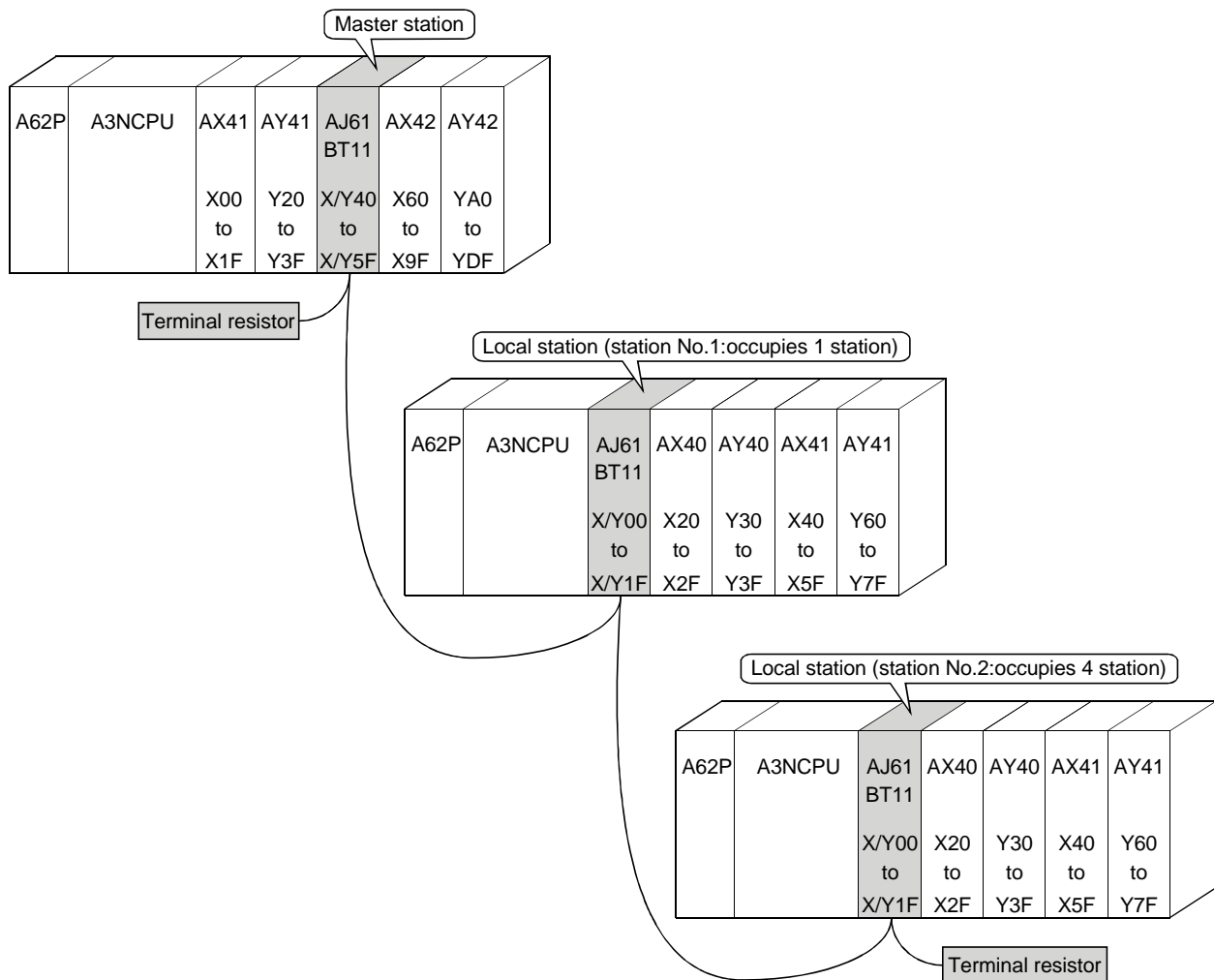
Confirm that the LED display shows the following status:



11.3.2 Confirming the operation by the program

Using the sequence program, confirm that the data link is proceeding normally.

- ① When M200 of the master station is turned on, M200 of the local station No.1 and the local station No.2 are turned on.
- ② When M0 of the local station No.1 is turned on, M0 of the master station and the local station No.2 are turned on.
- ③ When M32 of the local station No.2 is turned on, M32 of the master station and the local station No.1 are turned on.
- ④ When the data is written into D200 of the master station, it is stored in D200 of the local station No.1 and station No.2.
- ⑤ When the data is written into D300 of the local station No.1, it is stored in D300 of the master station and the local station No.2.
- ⑥ When the data is written into D304 of the local station No.2, it is stored in D304 of the master station and the local station No.1.



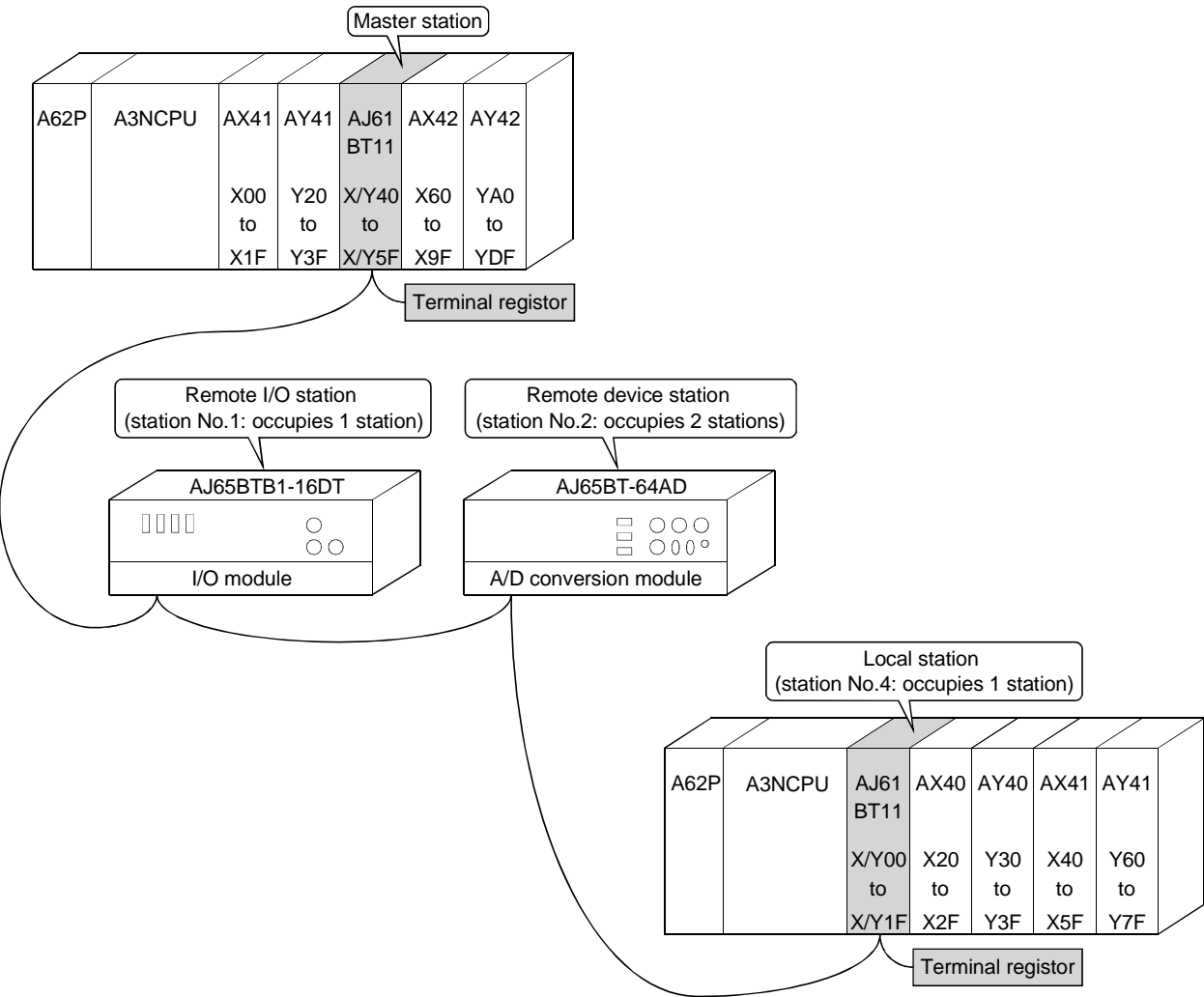
[illegible]

12. Communication in the Compound System

How to set, program, and confirm the operation of the module in a system where the remote I/O station, remote device station and local station coexist is described.

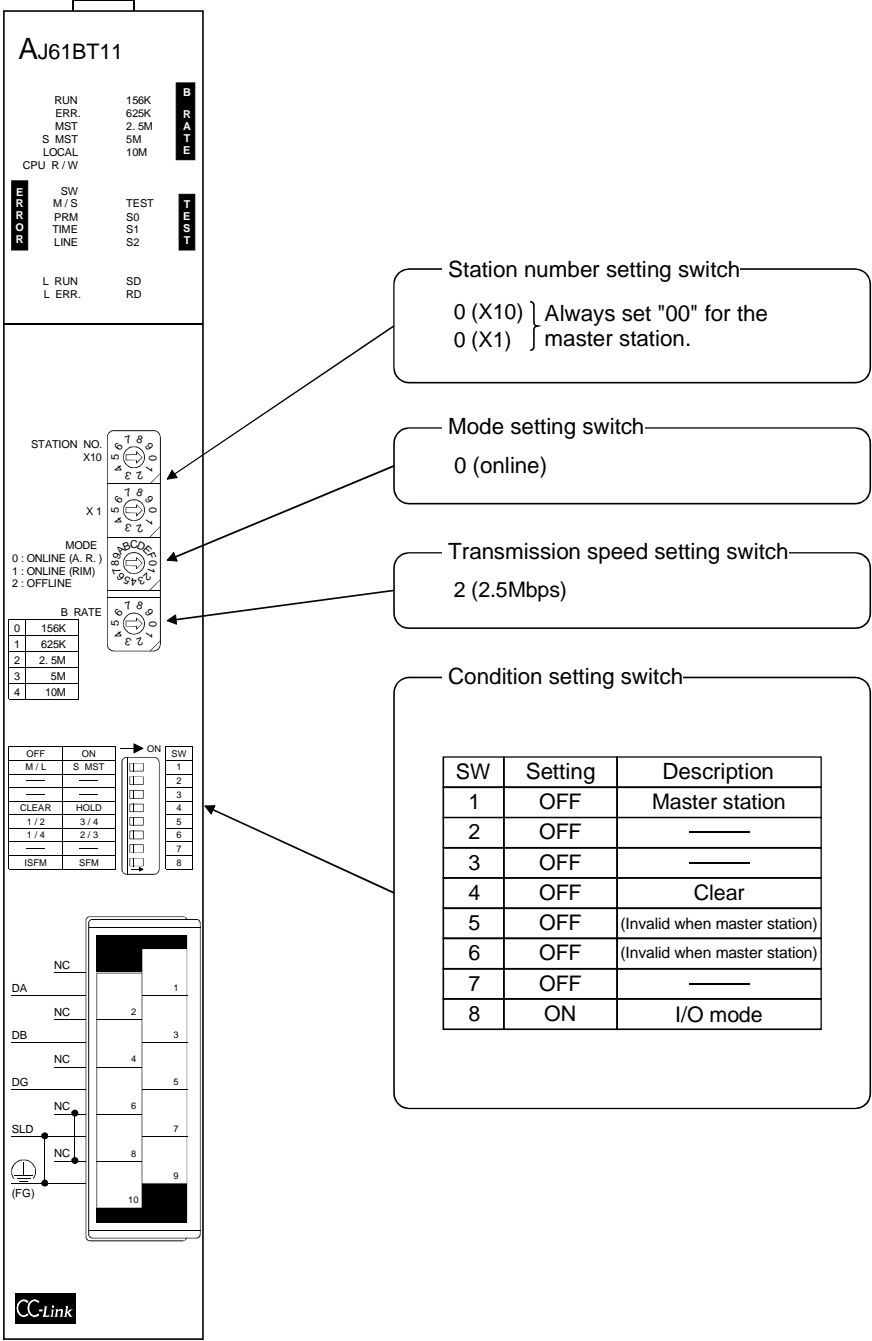
12.1 System Configuration

A system with a remote I/O station, a remote device station and a local station is used as an example.



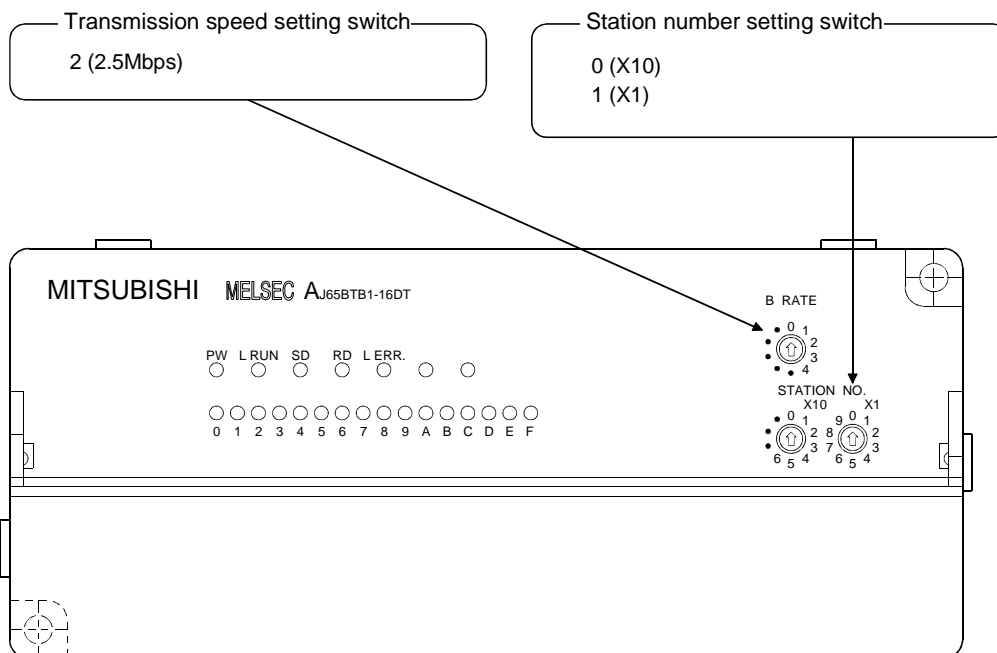
12.1.1 Setting of the master station

The settings of the switches on the master station are shown below:



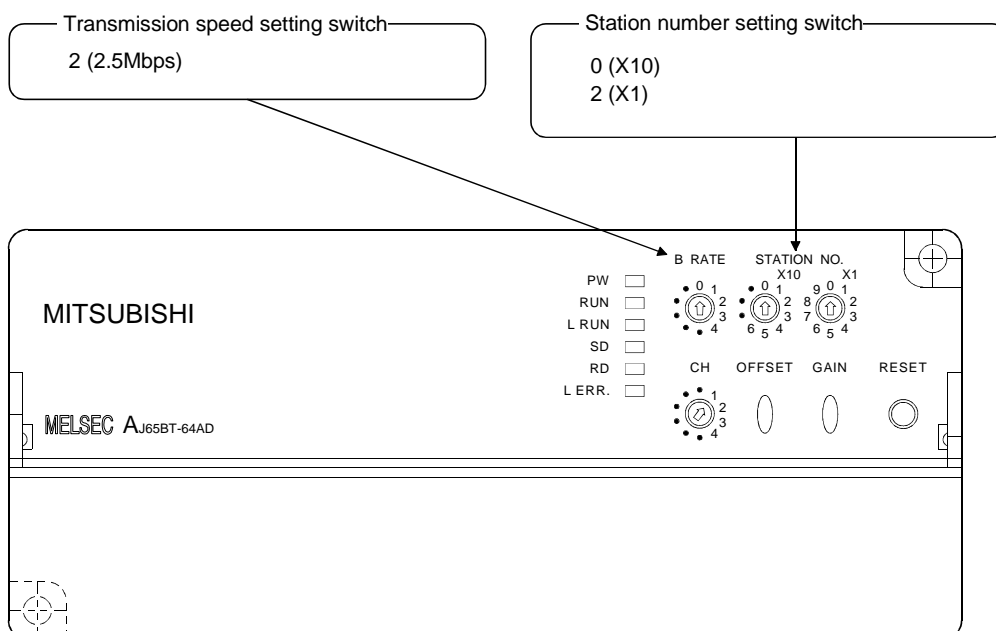
12.1.2 Setting of the remote I/O station

The settings of the switches on the remote I/O station are shown below:



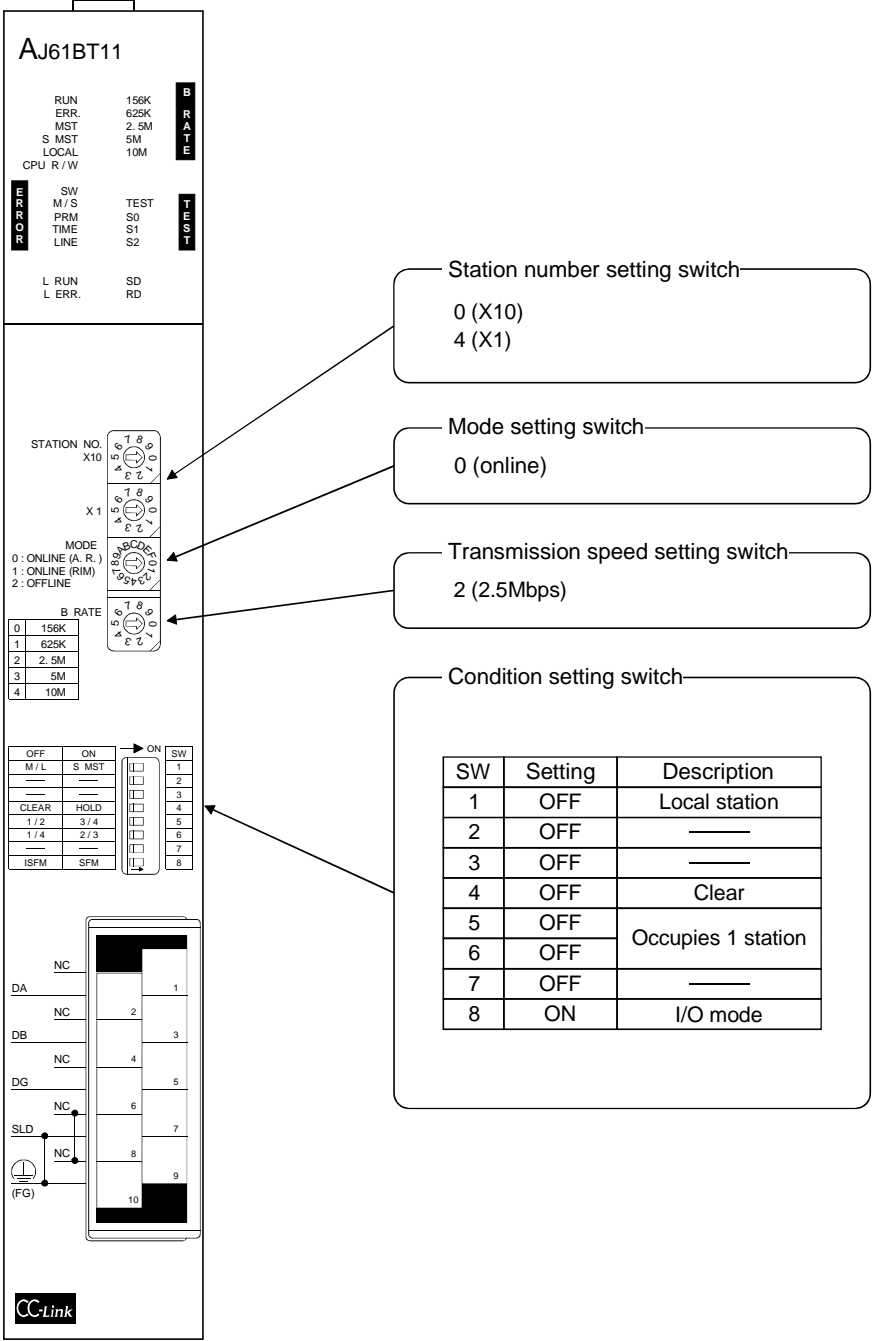
12.1.3 Setting of the remote device station

The settings of the switches on the remote device station are shown below:



12.1.4 Setting of the local station

The settings of the switches on the local station are shown below:



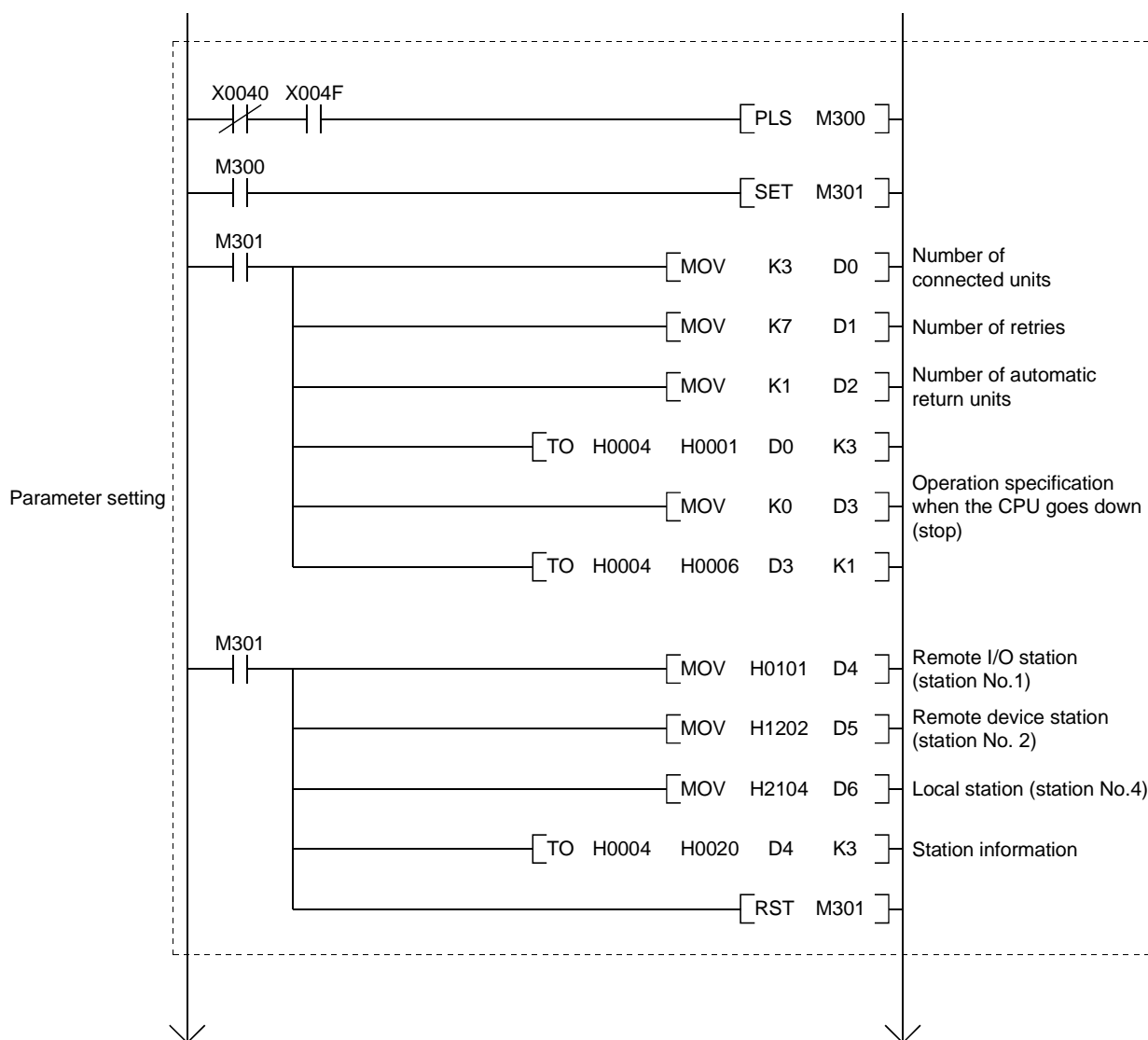
12.2 Creating a Program

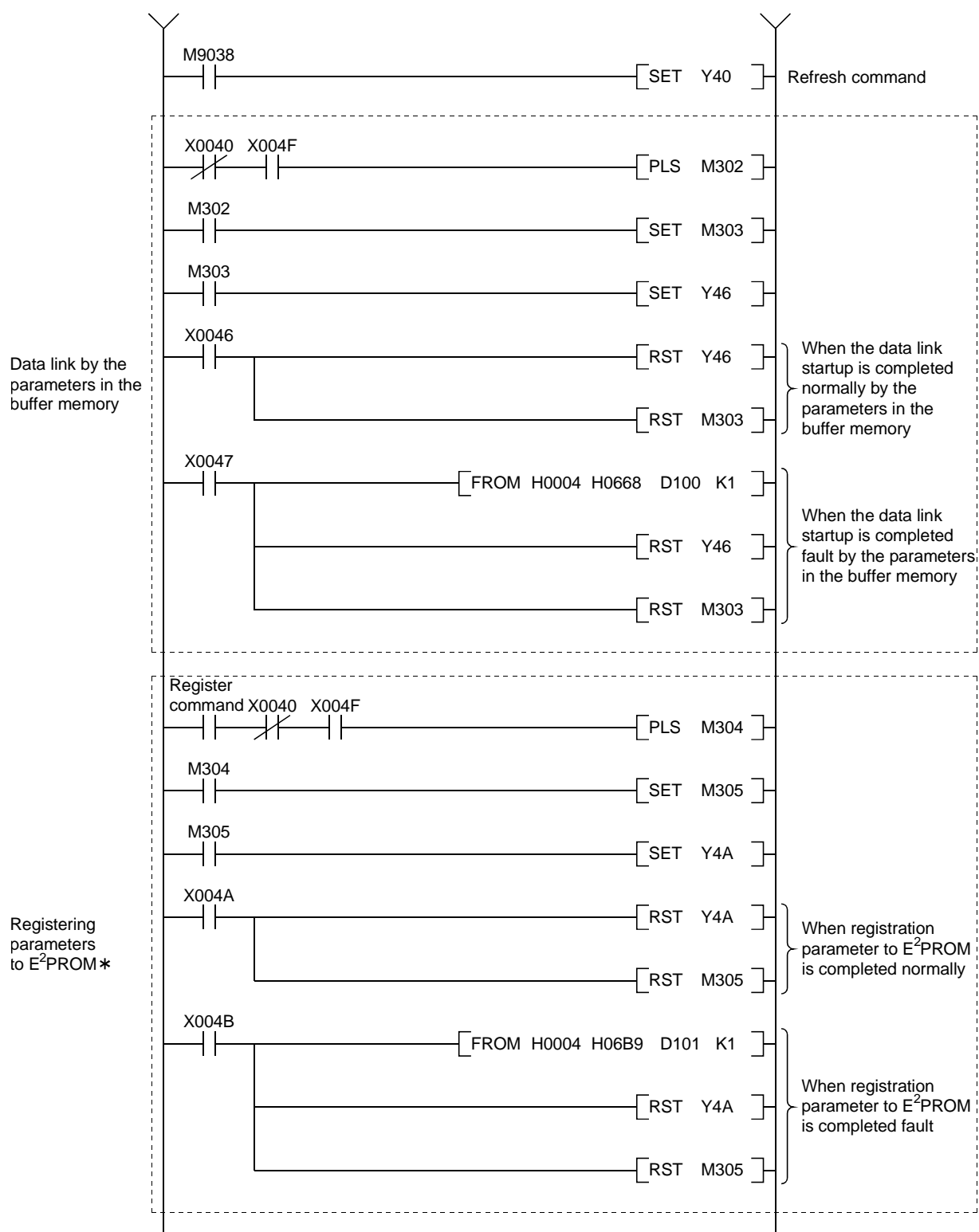
12.2.1 Program for the master station

(1) Parameten program

Program for the parameter this program automatically initiates the data link when the PC CPU starts running.

[When debugging]





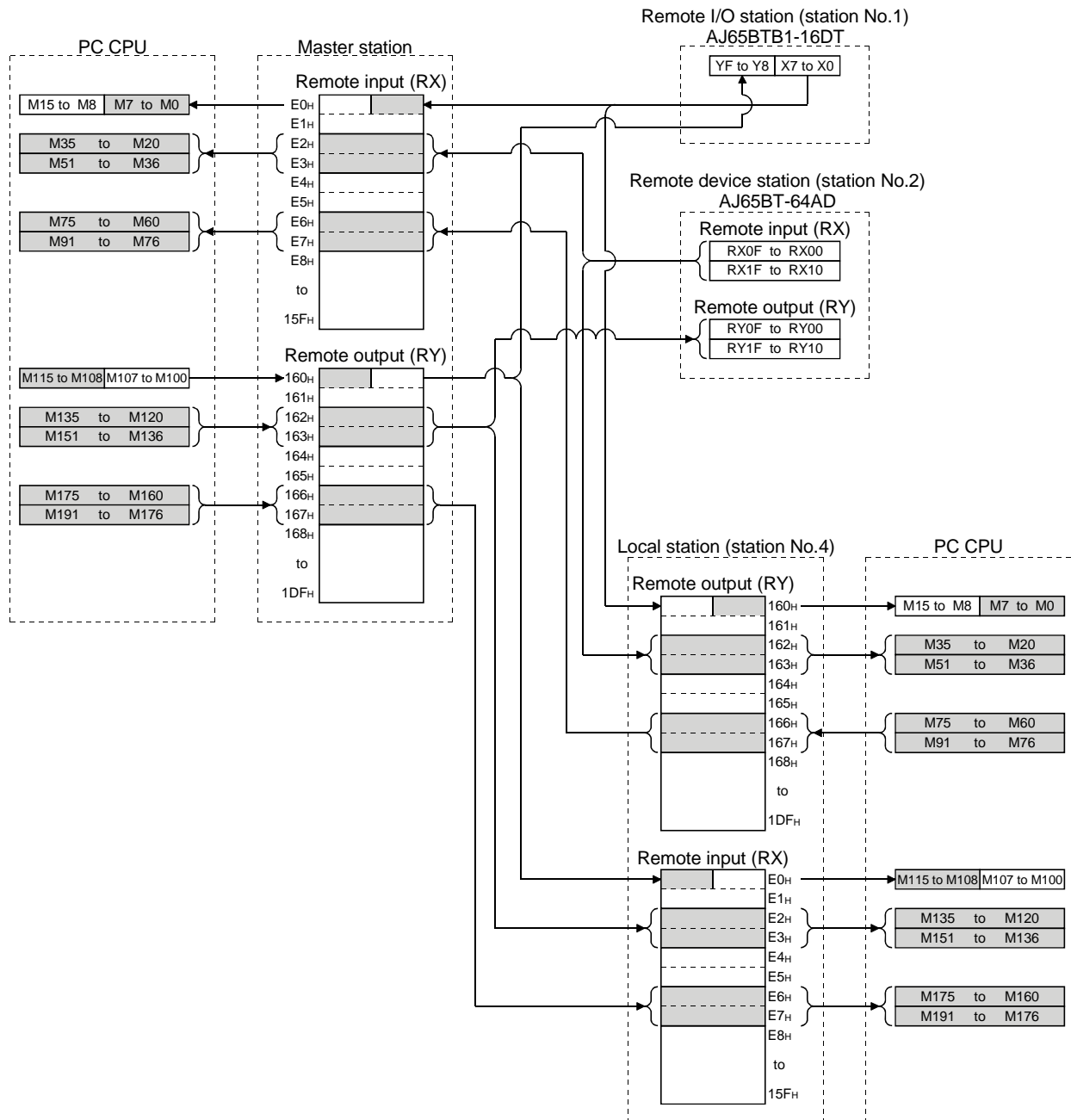
* : Refer to Section 8.2 when using the software version E (manufactured in Aug., 2001) or later of the A1SJ61BT11.



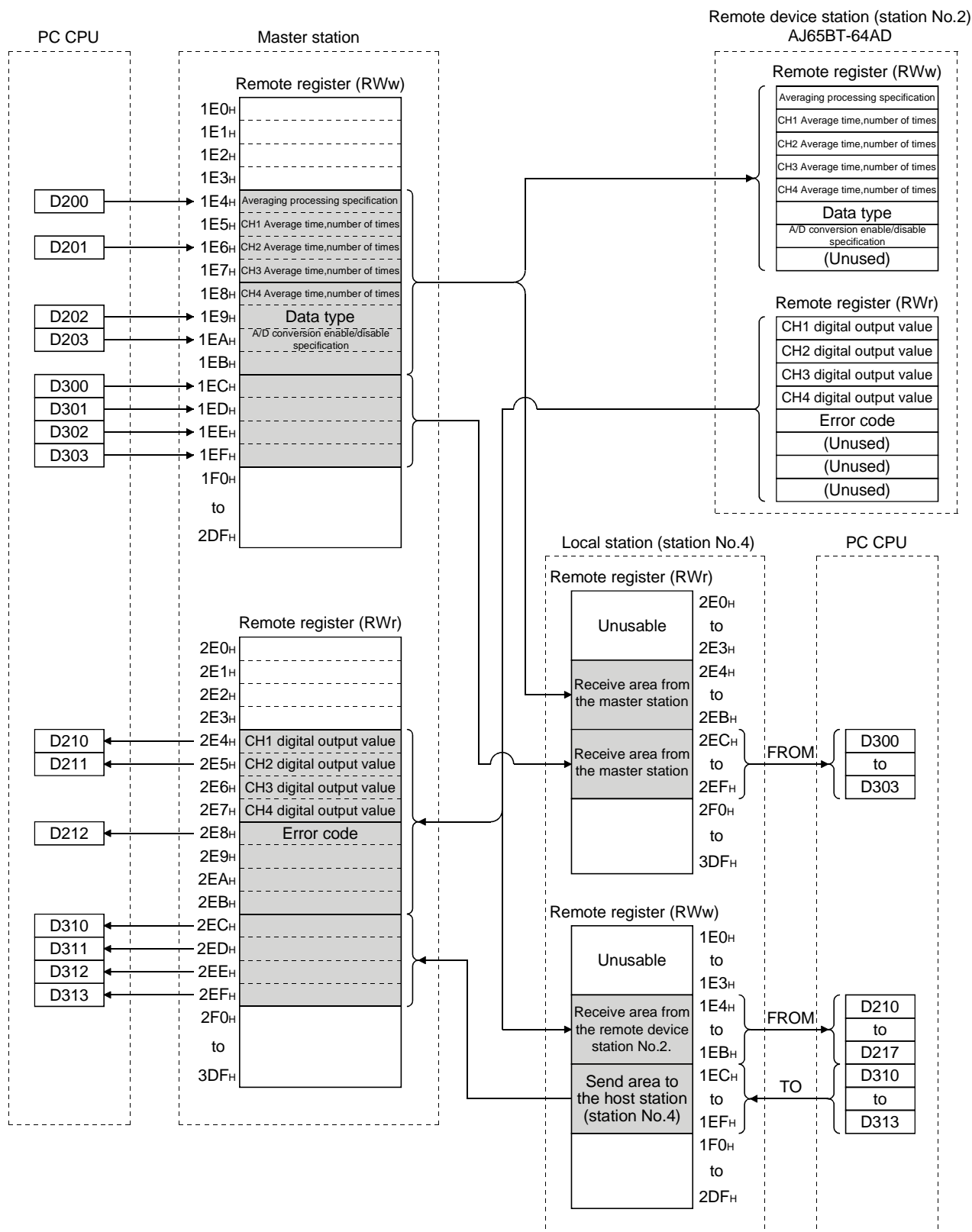
(2) Communication program

The following configuration of the PC CPU device, master station's buffer memory and local station's buffer memory is assumed.

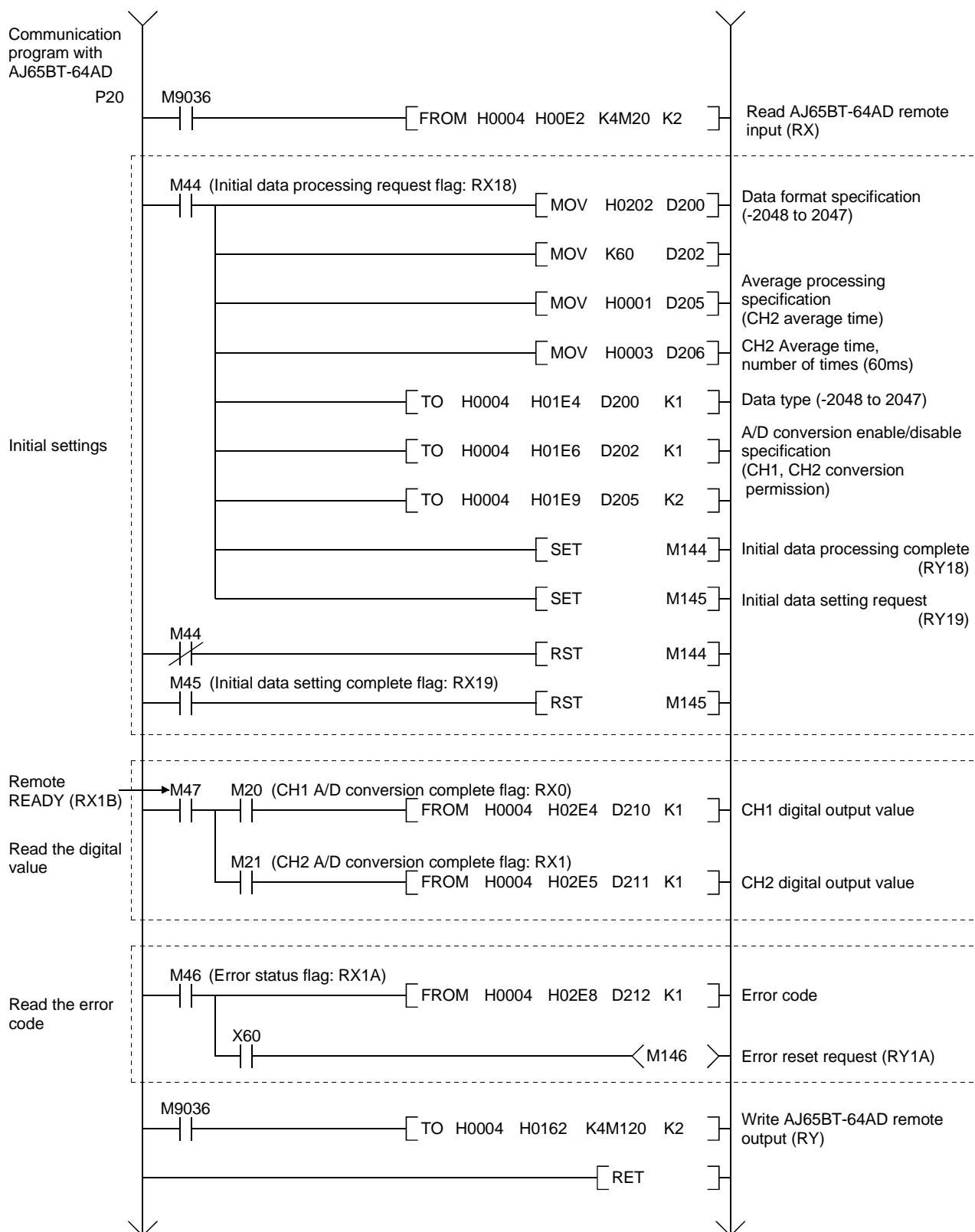
[Remote input (RX), remote output (RY)]

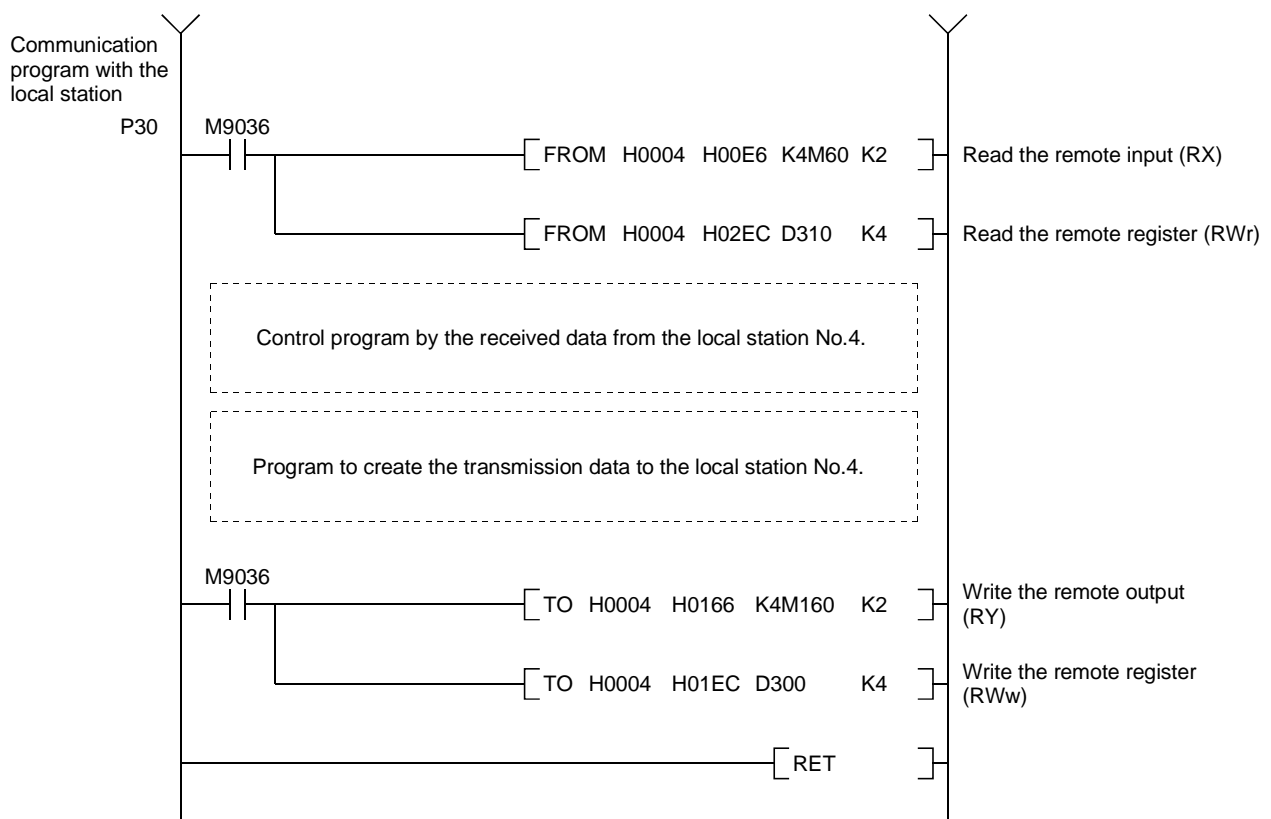


[Remote register(RWw, RWr)]









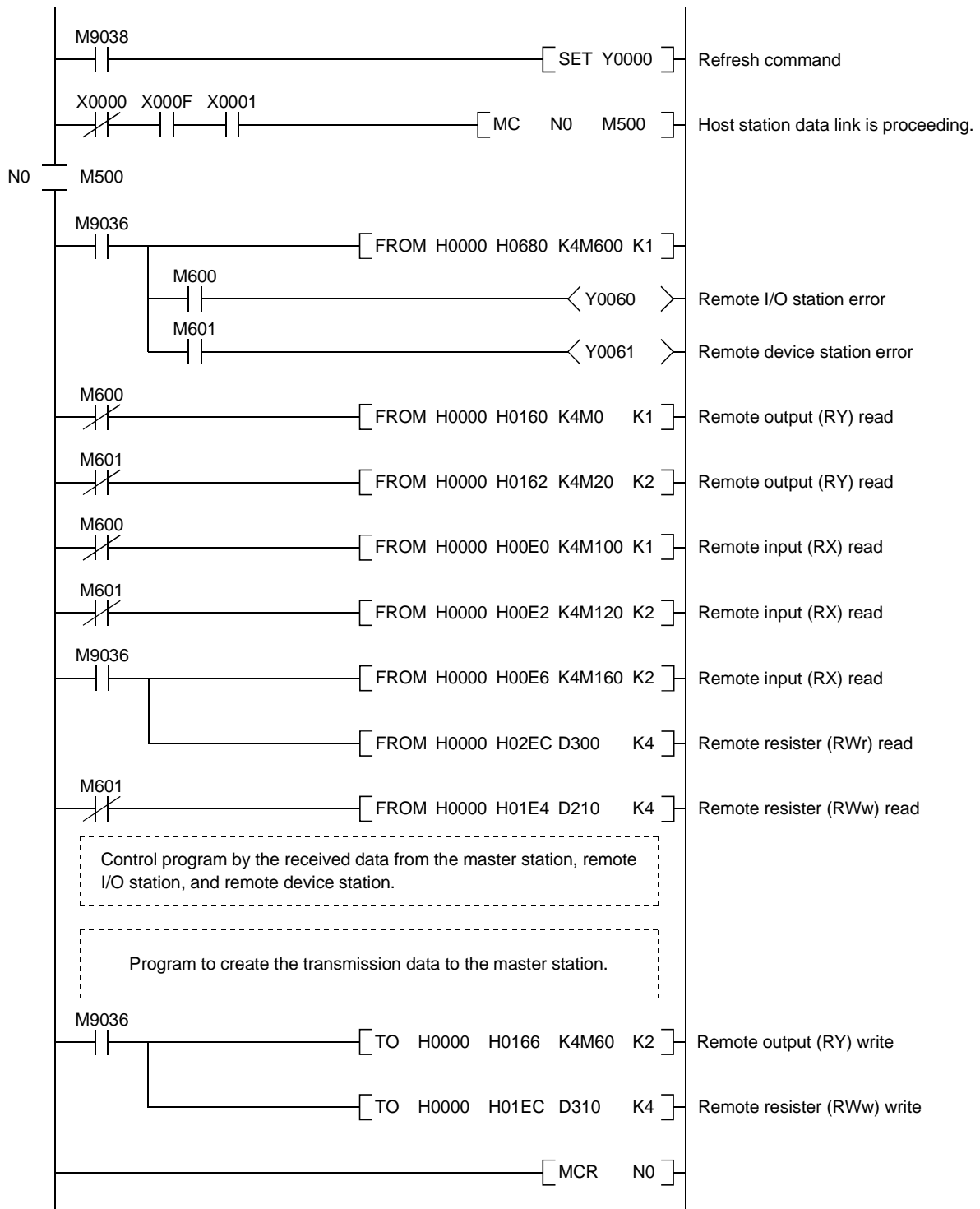
12.2.2 Local station program

(1) Program for parameters

Local stations do not need this.

(2) Program for communication

Refer to Section 12.2.1 (2), for the relationship between the PC CPU device, master station's buffer memory, and the local station's buffer memory.



12.3 Performing the Data Link

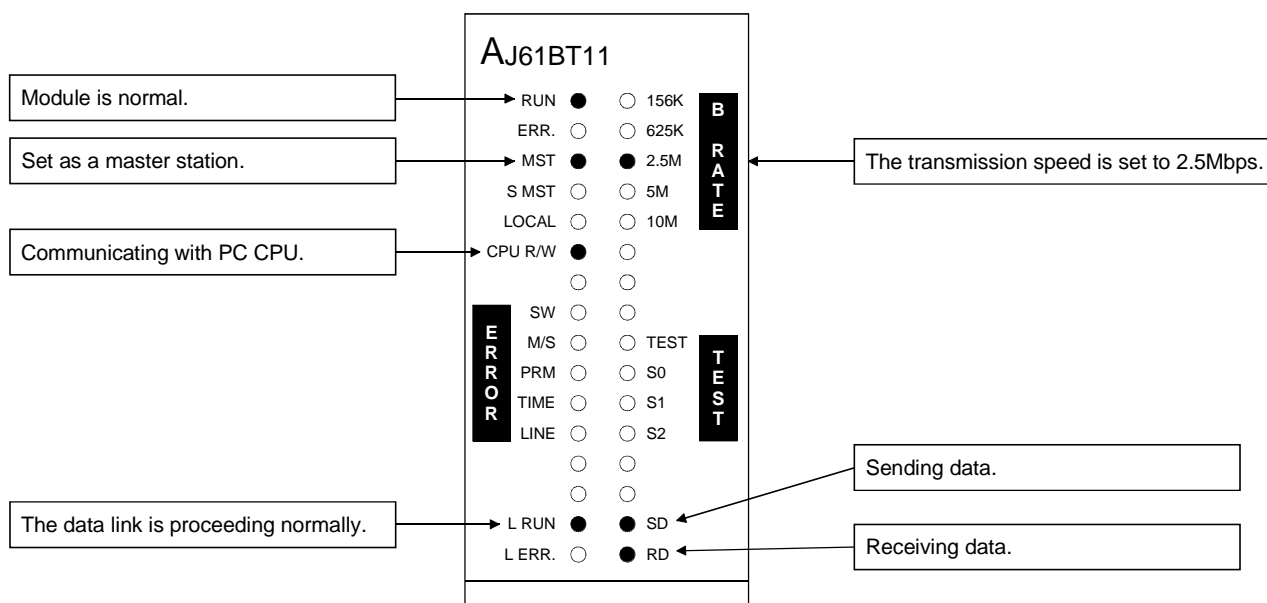
Turn on the power supply of the remote I/O station/remote device station/local station first, then the power supply of the master station to start the data link.

12.3.1 Confirming the operation by LED display

The following diagram shows the LED display status of the master station, the remote I/O station, the remote device station, and the local station when the data link is performed normally.

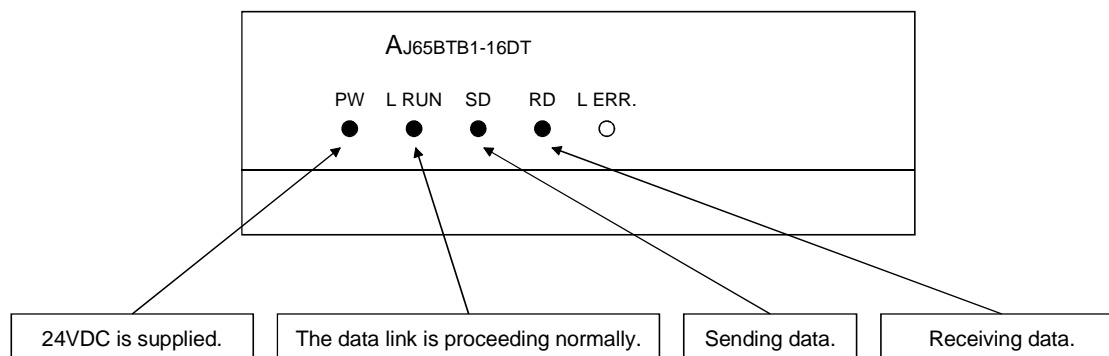
(1) LED display of the master station

Confirm that the LED display shows the following status:



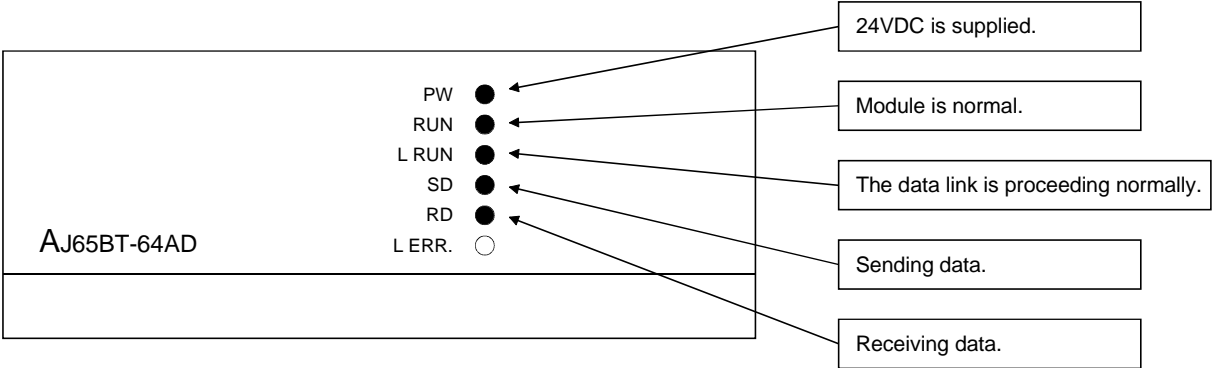
(2) LED display of the remote I/O station

Confirm that the LED display shows the following status:



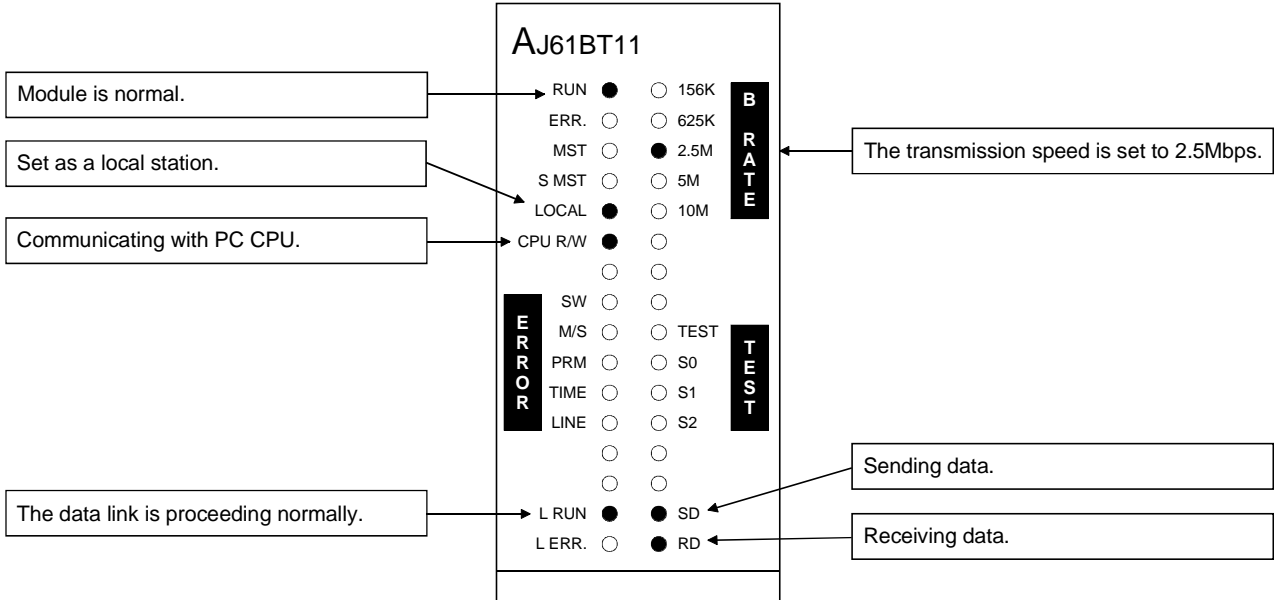
(3) LED display of the remote device station

Confirm that the LED display shows the following status:



(4) LED display of the local station

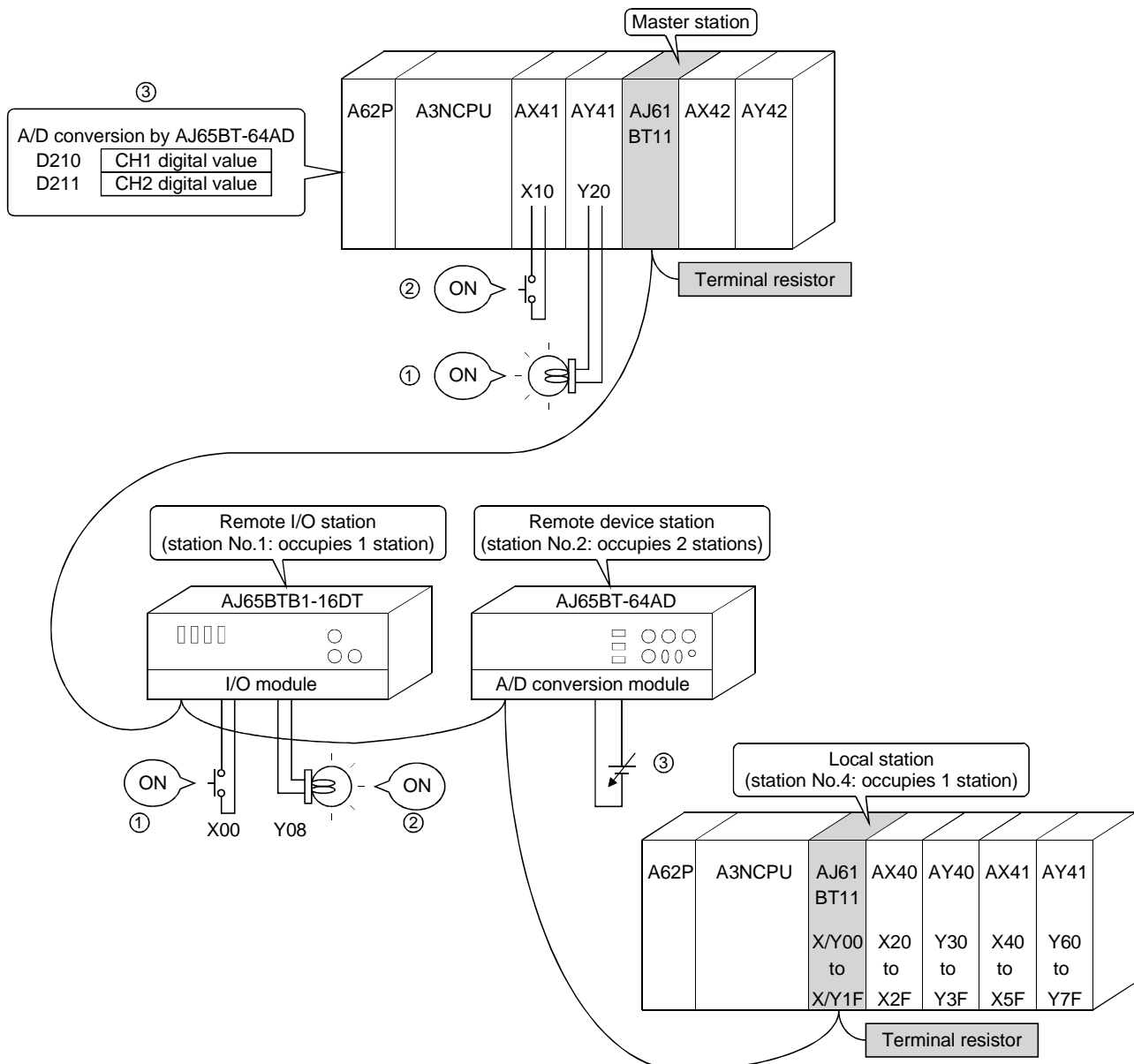
Confirm that the LED display shows the following status:



12.3.2 Confirming the operation by the program

Confirm if the data link can be performed normally using a sequence program.

- ① When X00 of the remote I/O station is turned on, Y20 of the master station is turned on.
- ② When X10 of the master station is turned on, Y08 of the remote I/O station is turned on.
- ③ The digital value which was converted by the remote device station is stored in D210 (CH1) and D211 (CH2) of the master station and the local station.
- ④ When M160 of the master station is turned on, M160 of the local station is turned on.
- ⑤ When the data is written into D100 of the master station, it is stored in D100 of the local station.
- ⑥ When M60 of the local station is turned on, M60 of the master station is turned on.
- ⑦ When the data is written into D310 of the local station, it is stored in D310 of the master station.



13. Troubleshooting

13.1 Verification when a Trouble Occurs

Details to be checked and corrective action for each trouble occurrence are shown below:

Trouble description	Details to be checked	Confirmation action
Unable to perform data link for the entire system.	Are there any disconnected cables?	<ul style="list-style-type: none"> Check the cable status visually or with a line test. Verify the line status (SW0090).
	Are terminal resistors connected properly to both end stations?	Connect terminal resistors attached to AJ61BT11 and A1SJ61BT11 to both end stations.
	Has an error occurred at the master station's PC CPU?	Verify the error code of PC CPU and perform the corrective action.
	Are parameters set for the master station?	Verify the parameter details.
	Is a request for data link startup (Yn6 or Yn8) turned on?	Verify the sequence program.
	Did an error occur at the master station?	Verify the following: <ul style="list-style-type: none"> The parameter status at the host station (SW0068) The switch setting status (SW006A) Loading status (SW0069) Is the master station "ERR" flashing? (Refer to Section 13.2.)
	Is the scan time exceeding the maximum value in the synchronous mode?	Switch to the asynchronous mode or slow down the transmission speed.
Unable to get input from a remote I/O station.	Is the remote I/O station performing data link?	Verify using the following means: <ul style="list-style-type: none"> LED display at the module The master station's communication status with other stations (SW0080 to SW0083)
	Is data read from the correct address of remote input RX (buffer memory)?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify parameters.
	Did the station number overlap?	Verify the station number.
Cannot output data from a remote I/O station.	Is the remote I/O station performing data link?	Verify using the following means: <ul style="list-style-type: none"> LED display of the module The master station's communications status with other stations (SW0080 to SW0083)
	Is the refresh specification (Yn0) at the master station turned on?	Verify the sequence program.
	Is data written to the correct address of remote output RY (buffer memory)?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify parameters.
	Did the station number overlap?	Verify the station number.
Unable to get remote input (RX) from a remote device station.	Is the remote device station performing data link?	Verify using the following means: <ul style="list-style-type: none"> LED display of the module The master station's communications status with other stations (SW0080 to SW0083)
	Is data read from the correct address of remote input RX (buffer memory)?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify parameters.
	Did the station number overlap?	Verify the station number.

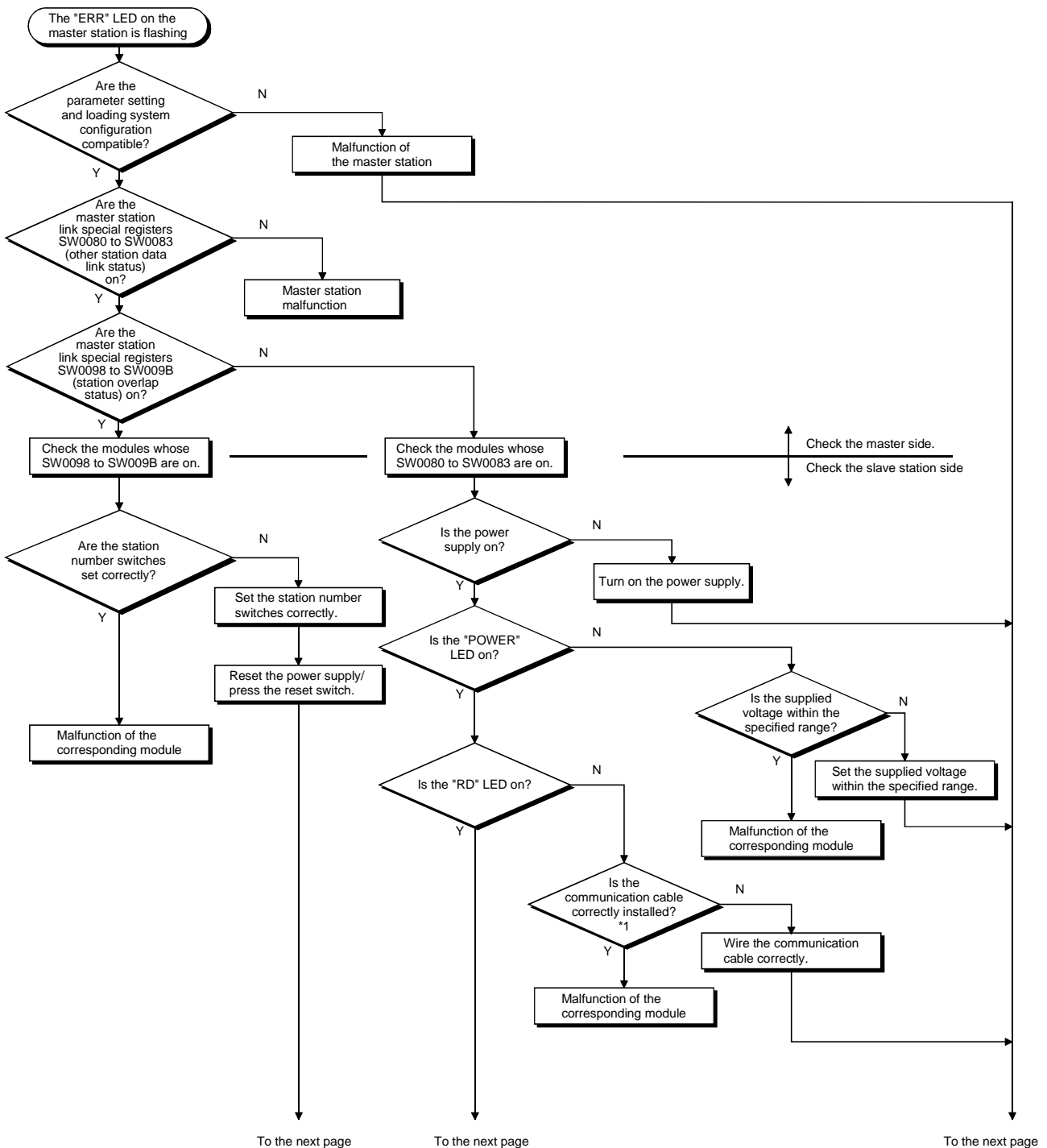
Things to do after checking for the communication status with other stations (SW0080 to 83)

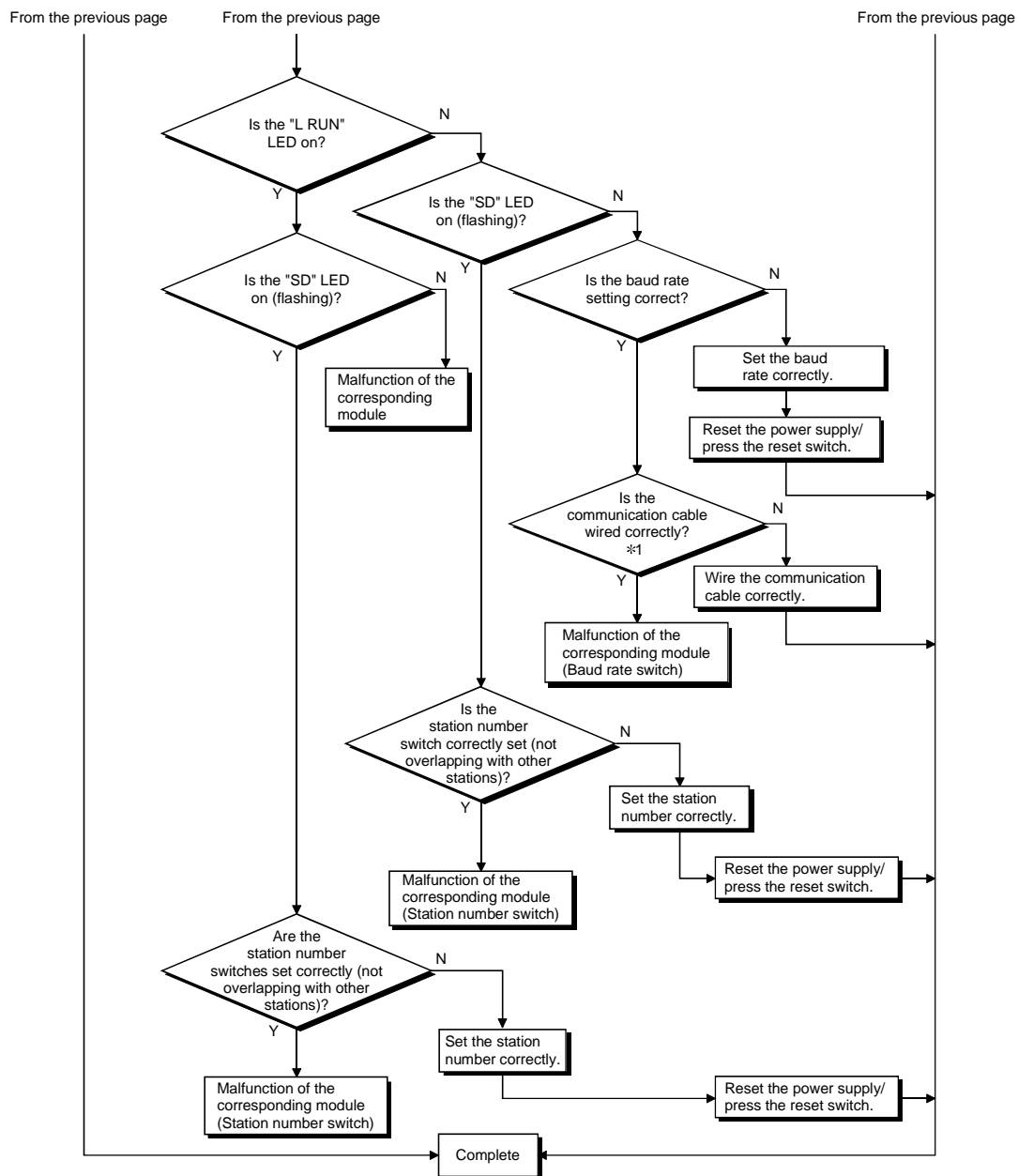
- ① Check if the wiring is correct.
- ② Check if the terminal resistors are connected correctly to the modules on both ends.
- ③ Confirm if the communication is successful after slowing down the transmission speed.
- ④ Confirm if the settings of the parameter and the startup station match each other.
- ⑤ Confirm if the station numbers do not overlap.
- ⑥ Replace with a correctly operating module, and check to see if it is a module malfunction.

Trouble description	Details to be checked	Confirmation action
Cannot turn on/off remote output (RY) from a remote device station.	Is the remote device station performing data link?	Verify using the following means: • LED display of the module • The master station's communications status with other stations (SW0080 to SW0083)
	Is the refresh specification (Yn0) turned on at the master station?	Verify the sequence program.
	Is data written to the correct address of remote output RY (buffer memory)?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify parameters.
	Did the station number overlap?	Verify the station number.
Unable to get the remote register (RW _r) data from a remote device station.	Is the remote device station performing data link?	Verify using the following means: • LED display of the module • The master station's communications status with other stations (SW0080 to SW0083)
	Is data read from the correct address of the remote register RW _r (buffer memory)?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify the parameters.
	Did the station number overlap?	Verify the station number.
Unable to write data onto the remote register (RW _w) at a remote device station.	Is the remote device station performing data link?	Verify using the following means: • LED display of the module • The master station's communications status with other stations (SW0080 to SW0083)
	Is data written to the correct address of remote register RW _w (buffer memory)?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify the parameters.
	Did the station number overlap?	Verify the station number.
Unable to communicate from the master station (remote output RY) to the local station (remote input RX).	Is the corresponding local station performing data link?	• Check the LED indication of the corresponding local station. • Check the communication status of the master station with other stations (SW0080 to SW0083).
	Is the refresh specification (Yn0) at the master station turned on?	Verify the sequence program.
	Is data written to the correct address of the remote output RY (buffer memory) at the master station?	Verify the sequence program.
	Is data read from the correct address of the remote input RX (buffer memory) at the local station?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify the parameters.
	Did the station number overlap?	Verify the station number.
Unable to communicate from the local station (remote output RY) to the master station (remote input RX).	Is the corresponding local station performing data link?	• Check the LED indication of the corresponding local station. • Check the communication status of the master station with other stations (SW0080 to SW0083).
	Is the refresh specification (Yn0) at the local station turned on?	Verify the sequence program.
	Is data written to the correct address of remote output RY (buffer memory) at the local station?	Verify the sequence program.
	Is data read from the correct address of the remote input RX (buffer memory) at the master station?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify the parameters.
	Did the station number overlap?	Verify the station number.

Trouble description	Details to be checked	Confirmation action
Unable to communicate from the master station (remote register RWw) to the local station (remote register RWr).	Is the corresponding local station performing data link?	• Check the LED indication of the corresponding local station.
	Does the occupied station count setting of the local station match the station information of the master station?	• Check the communication status of the master station with other stations (SW0080 to SW0083).
	Is data written to the correct address of remote register RWw (buffer memory) at the master station?	Verify the sequence program.
	Is data read from the correct address of the remote register RWr (buffer memory) at the local station?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify the parameters.
	Did the station number overlap?	Verify the station number.
Unable to communicate from the local station (remote register RWw) to the master station (remote register RWr).	Is the corresponding local station performing data link?	• Check the LED indication of the corresponding local station.
		• Check the communication status of the master station with other stations (SW0080 to SW0083).
	Is data written to the correct address of remote register RWw (buffer memory) at the local station?	Verify the sequence program.
	Is data read from the correct address of the remote register RWr (buffer memory) at the master station?	Verify the sequence program.
	Is the station incorrectly set as reserved?	Verify the parameters.
	Did the station number overlap?	Verify the station number.
Unable to stop data link.	Is the data link stop (SB0002) turned on?	Verify the sequence program.
	Did an error occur?	Verify the data link stop result (SW0045).
Unable to restart data link.	Is the data link stop (SB0000) turned on?	Verify the sequence program.
	Did an error occur?	Verify the data link restart result (SW0041).
Parameter cannot be registered in E ² PROM.	Is the parameter registration request (YnA) to the E ² PROM on?	Verify the sequence program.
	Any errors occurred?	Verify the E ² PROM registration status (SW00B9).
Remote/local station does not start up.	Are the station information in the parameters and the settings as the module which does not start up consistent?	Verify the parameters.
	Overlapping with other module's station number?	Verify the station number setting switch.
Faulty stations cannot be detected.	Set as an error-invalid station?	Verify the parameters.
	Did the station number overlap?	Verify the station number.
Faulty stations arise due to transmission speed.	Is it possible to specify faulty station from the communication status with other stations (SW0080 to 83)?	• Verify the faulty station switch setting.
	Can communicate normally when changed to slower transmission speed like 156 kbps?	• Verify if the wiring is correct. • Verify if the cable shield has been grounded.
The abnormal completion bit turns on when executing a dedicated	Did an error occur?	• Verify the CPU's error code. • Verify the master station's error code.
	Is an automatic refresh parameter set?	Set the automatic refresh parameter using an RRPA instruction.
Xn1 (host station data link status) does not turn ON.	<ul style="list-style-type: none"> Is the program not created so that it executes the FROM/TO instruction multiple times during one sequence scan? Is the sequence scanning speed not far higher than the link scanning speed when the FROM/TO instruction is present? 	<ul style="list-style-type: none"> Reduce the number of FROM/TO instructions in the program. Add XnC, as b contact, to the start contact of the FROM/TO command.
Link special relay (SB)/link special resistor (SW) are not updated correctly.		

13.2 Troubleshooting when the "ERR" LED on the Master Station is Flashing





*1 Check for a short, reversed connection, wire breakage, terminal resistor, FG connection, overall distance and station-to-station distance.

13.3 Error Codes

Error codes stored in the link special register (SW) are as follows:

Table 13.1 Error code list

Error code (hex)	Error details	Cause of error occurrence (Details)	Corrective action	Detection possibility								
				Master station	Local station							
B110 *1	Message receiving unable	Line error occurred.	Check the wiring.	○	○							
B111 *1	Message data receive sequence error	Line error occurred.	Check the wiring.	○	○							
B112 *1	Message data length error	Line error occurred.	Check the wiring.	○	○							
B113 *1	Message data identification error	Line error occurred or instantaneous power failure occurred at the transmission station.	Check the wiring, or reexamine the transmission station's supplied power or the power supply module.	○	○							
B114 *1	Link error	Line error occurred.	Check the wiring.	○	○							
B115 *1	Link error	Line error occurred.	Check the wiring.	○	○							
B116 *1	Head bit faulty error	Line error occurred.	Check the wiring.	○	○							
B201 *1	Corresponding station error during sending	Data link error occurred at the corresponding station during transient transmission.	Confirm the other station's communication status, existence of temporary error invalid station specification, and whether the host station is stopped or not.	○	○							
B301	Link stop processing request error	Line test request was issued during link stop.	Perform the line test during the start operation of the link.	○	○							
B302	Specified station No. setting error	The station No. specified for temporary error invalid request/temporary error invalid canceling request exceeded the maximum communication station No.	Specify a station with the maximum communication station No. or less.	○	×							
B303	Specified station No. unsetting error	The station No. specified for the temporary error invalid request/temporary error invalid canceling request is not set.	Set the specified station No. (SW0003, SW0004 to SW0007)	○	×							
B304	Line test error station detection (receiving status error)	An error was detected in the remote, intelligent device or standby master station during the line test.	Check that the remote, intelligent device or standby master station is turned ON, and the cable is not broken.	○	×							
B306	Specified station No. setting error	A station other than the head station was specified by the temporary error invalid request/temporary error invalid canceling request.	Specify the head station by the temporary error invalid request/temporary error invalid canceling request.	○	○							
B307	All station data link error	An all station data link error has occurred during the following requests: • SB0000 (restart data link) • SB0002 (stop data link)	Request again after the data link is returned to normal.	○	○							
B308	Station No. setting error (loading status)	The slave station No. is set to a number other than 1 to 64.	Set the slave station No. to 1 to 64.	○	×							
B309	Station No. overlap error	The station numbers of the connected modules are set overlapped (including the number of occupied stations). However, this excludes the overlap of the head station number.	Confirm the module station number.	○	×							
B30A	Loading/parameter compatibility error	The station type of the module and parameter content are different. Example: <table border="1"><tr><th>Module</th><th>Parameter</th></tr><tr><td>Remote device station</td><td>Remote I/O station</td></tr><tr><td rowspan="2">Intelligent device station</td><td>Remote I/O station</td></tr><tr><td>Remote device station</td></tr></table>	Module	Parameter	Remote device station	Remote I/O station	Intelligent device station	Remote I/O station	Remote device station	Set the parameters correctly.	○	×
Module	Parameter											
Remote device station	Remote I/O station											
Intelligent device station	Remote I/O station											
	Remote device station											

* 1: Error code added to the function version B or later.

Error code (hex)	Error details	Cause of error occurrence (Details)	Corrective action	Detection possibility	
				Master station	Local station
B30B *1	Loading/parameter compatibility error	The loading status is different from the content of the network parameters.	Match the loading status with the content of the network parameters.	○	×
B30C *1	Standby master station specified error	For master station switching, a station other than the standby master station was specified.	Specify the station number of the standby master station.	○	○
B30D *1	Temporary error invalid station specified error	The temporary error invalid station was specified before the link is started.	Specify the temporary error invalid station during data link.	○	×
B384	Station No. setting error (parameter)	The station number (including the number of occupied stations) in the parameter's station information (address 20 _H to 5F _H) is set at the value "other than 1 _H to 40 _H ".	Set it in the range of "1 _H to 40 _H ."	○	×
B385	Total number of stations error (parameter)	The total number of occupied stations set in the parameter station information (address 20 _H to 5F _H) exceeds 64.	Set the parameter to 64 or less.	○	×
B386	Number of occupied stations setting error (parameter)	Number of all occupied stations is set at "0" in the parameter's station information (address 20 _H to 5F _H).	Set it in the range of "1 to 4."	○	×
B387	Unusable area write error	Writing was carried out in the unusable area (unused) of the buffer memory.	Do not write in the unusable area (unused) of the buffer memory.	○	○
B388	Station type setting error	The station type in the parameter's station information (address 20 _H to 5F _H) is set at the value "other than 0 to 2."	Set it in the range of "0 to 2."	○	×
B389	Unusable area write error	Writing was performed in the unusable area (unused) of the buffer memory.	Do not write in the unusable area (unused) of the buffer memory.	○	○
B38B	Remote device station setting error (parameter)	The number of remote device stations of more than 43 modules was set in the parameter's station information (address 20 _H to 5F _H).	Set it at "42 or less."	○	×
B38C	Intelligent device station setting error (parameter)	The number of intelligent device stations of more than 27 modules was set in the parameter's station information (address 20 _H to 5F _H).	Set it at "26 or less."	○	×
B38D	Invalid station specified error (parameter)	In the parameter's invalid station specification (address 14 _H to 17 _H), the "value other than module's head station number" or the "station number that is not set by parameter" is set. <Example for the value other than head station number> A bit other than station No. 5 is on for the module occupying 4 stations (station No. 5 to 8).	Set the "module's head station number." Do not set the "station number that is not set by parameter."	○	×
B38E *1	Communication buffer allocation error	The total size of the communication buffer in the parameter's station information (address 20 _H to 5F _H) exceeds 4 k words.	Set the total size of the communication buffer at 4 k words or less.	○	○
B38F *1	Automatic updating buffer allocation error	The total size of the automatic updating buffer in the parameter's station information (address 20 _H to 5F _H) exceeds 4 k words.	Set the total size of the automatic updating buffer at 4 k words or less.	○	○

*1: Error code added to the function version B or later.

Error code (hex)	Error details	Cause of error occurrence (Details)	Corrective action	Detection possibility	
				Master station	Local station
B390	Standby master station specified error (parameter)	The parameter's standby master station specification (address 4H) is set at the value "other than 1 to 63."	Set it in the range of "1 to 63."	○	○
B391	Number of retries setting error (parameter)	The number of retries is set at the value "other than 1 to 7" in the parameter (address 2H).	Set it in the range of "1 to 7."	○	×
B392	Operation at CPU failure specified error (parameter)	Operation at CPU failure is set at "0 or the value other than 1" in the parameter (address 6H).	Set it at "0 or 1."	○	×
B393	Scan mode specified error (parameter)	The scan mode specification is set at "0 or the value other than 1" in the parameter (address 7H).	Set it at "0 or 1."	○	○
B394	Number of automatic return stations setting error (parameter)	Parameter's number of automatic return stations (address 3H) is set at the value "other than 1 to 10."	Set it in the range of "1 to 10."	○	×
B396	Station number overlap error (parameter)	Station number is set overlapped in the parameter's station information (address 20H to 5FH).	Set the station number so that it is not overlapped with the others.	○	×
B397	Station information setting error (parameter)	Parameter's station information (address 20H to 5FH) does not satisfy the following conditions: $(16 \times A) + (54 \times B) + (88 \times C) \leq 2304$ A : Number of remote I/O stations B : Number of remote device stations C : Number of intelligent device stations (including local stations)	Set parameters to satisfy the conditions mentioned left.	○	×
B398	Number of occupied stations setting error (parameter)	The number of occupied stations in the parameter's station information (address 20H to 5FH) is set at the value "other than 1 to 4."	Set it in the range of "1 to 4."	○	×
B399	Number of connected modules setting error (parameter)	The number of connected modules (address 1H) is set at the value other than "1 to 64" in the parameter.	Set it in the range of "1 to 64."	○	×
B39A * 1	Standby master station specified error (loading status)	The status setting switch of the station number different from that specified with the parameter is set in the standby master station.	Confirm the parameter or status setting switch.	×	○
B39B	Reserve station specified error (parameter)	The parameter's reserve station specification is set to all reserve stations.	Check the parameter's reserve station specification.	○	×
B39C * 1	Standby master station setting error	The station information of the station number specified as the standby master station has been set to other than the intelligent device station.	Correct the station information of the station specified as the standby master station to be the intelligent device station.	○	×
B401 * 1	Parameter change error	Parameter was changed during transient request.	Change the parameter after all transient requests are complete or before the requests are made.	○	○
B404 * 1	Response error	The response does not come back within the watchdog time from the requested station.	Set the watchdog time to a longer value. If the error persists, confirm the requested module and cable.	○	○

* 1: Error code added to the function version B or later.

Error code (hex)	Error details	Cause of error occurrence (Details)	Corrective action	Detection possibility	
				Master station	Local station
B405 *1	Transient requesting station error	A transient request was issued to the remote I/O station or remote device station.	Issue the transient request to the local station or intelligent device station.	○	○
B406 *1	RY simultaneous ON error	RY is turned ON before the response is complete, or a request is issued without turning RY off.	After the response is complete, always turn RY off before sending a request.	○	○
B407 *1	Transient communication number unmatched error	The request data number is different from the response data number.	Check the line.	○	○
B510 *2	Transmission channel in use (host station)	A channel being used was used.	The same channel cannot be used simultaneously. Change the channel number, or try not to use the same channel simultaneously.	○	○
B511 *2	Receive channel in use	The channel of the target station is in use.	Wait for a while before executing the SEND instruction again. Check whether there are multiple requests to the same channel of the target station from the local station or multiple stations.	○	○
B512 *2	Arrival wait time out	The arrival watchdog time has elapsed (when the number of retransmission is 0), or the RECV instruction was executed even though the RECV instruction execution request flag was not on.	When the error occurs with a RECV instruction, increase the value of arrival watchdog time if other stations are executing SEND instructions. If the local station is executing instructions, increase the value of arrival watchdog time. If the error persists, check the network and the target station.	○	○
B513 *2	Number of retries count over	When the send/receive instruction was used, the number of retries exceeded the set number.	Increase the arrival watchdog time. If the error persists, check the network and the target station.	○	○
B515 *2	Channel number error	The channel number is out of the setting range.	Set the channel at the local and target stations to either 1 or 2.	○	○
B519 *2	Number of retransmissions error	The number of retransmissions is out of the setting range.	Set it in the range of 0 to 15 (times).	○	○
B51A *2	Arrival watchdog time error	The arrival watchdog time is out of the setting range.	Set it in the range of 0 to 32767 (seconds).	○	○
B520 *2	Transmission destination station number error	The value "other than 0" is set for the target station number.	Set the target station number to "0."	○	○
B524 *2	Transmission destination station CPU error	There is an error in the CPU at the transmission destination station.	Check the CPU of the transmission destination station.	○	○
B601 *1	Request type error	An unsupported request was received.	Check the request or target station number.	○	○
B602 *1	Transient request overload error	There are too many transient requests to the station.	Wait for a while before transmission (transient transmission is under overload).	○	○
B603 *1	Transient request overload error	There are too many transient requests to the corresponding station.	Wait for a while before transmission (transient transmission is under overload).	○	○

*1: Error code added to the function version B or later.

*2: Error code added to the software version J (manufactured in Jan., 1998) or later.

Error code (hex)	Error details	Cause of error occurrence (Details)	Corrective action	Detection possibility	
				Master station	Local station
B604 *1	Line test processing	The transient transmission was performed during line test processing.	Resend after waiting for a while.	○	×
B605 *1	Communication buffer access unable	Access could not be gained to the communication buffer.	Resend after waiting for a while.	○	○
B607 *2	Transmission destination station CPU error	There is an error in the CPU at the transmission destination station.	Check the CPU at the transmission destination station.	○	○
B608 *2	Mode setting error	A transient request addressed to the host station PLC CPU was received in the I/O mode.	Set SW8 of the condition setting switch to OFF (intelligent mode).	○	○
B771 *2	Transient request overload error	There are too many transient requests to the corresponding station (when AJ65BT-G4, A8GT-J61BT13, or CC-Link board is requesting).	Resend after waiting for a while (The transient transmission is in the excessively loaded state).	○	○
B774 *2	Transient request error	The corresponding station was not the intelligent device station (when A8GT-J61BT13 or CC-Link board is requesting).	Confirm that the corresponding station is the intelligent device station.	○	○
B778 *2	Response time out	The response does not come back from the requested station (when A8GT-J61BT13 or CC-Link board is requesting).	Confirm the requested module and cable.	○	○
B780 *2	Module mode setting error	The transient transmission was performed even though the corresponding station was set at the I/O mode.	Set the corresponding station at the intelligent mode.	○	○
B801 *1	Access code setting error	An access code and its attribute which do not exist were used.	Use the correct access code and its attribute.	○	○
B802 *2	Access code error	An access code which does not exist was used.	Use the correct access code.	○	○
B803 *1	Data points error	The data point is out of the specified range.	Set the data points in the range of 1 to 960 bytes.	○	○
B804 *1	Attribute definition error Transient transmission non-supporting station specifying error	The attribute definition of the transient transmission-dedicated instruction is illegal. Alternatively, transient transmission was executed though the target station was not a station that supported transient transmission.	Reconsider the attribute definition. Reconsider the target station number specified. Alternatively, check the function version and software version of the target local station.	○	○
B805 *1	Data points error	The data point is out of the specified range.	Set the data points in the range of 1 to 100 in writing and in the range of 1 to 160 in reading.	○	○
B807 *1	Address definition error	Address is not hex during bit device accessing.	Set the address to be hex for accessing bit device.	○	○
B80D *2	Setting range error	The combination of the set address and the number of points exceeds the processible capacity.	Set the number of points processed so that it does not exceed the specified range.	○	○
B814 *2	File register capacity setting error	The file register capacity is not set.	Set the file register capacity.	○	○
B815 *2	Module mode setting error	The transient transmission was performed even though the corresponding station was set at the I/O mode.	Set it at the intelligent mode.	○	○
B901	E ² PROM error	When a parameter registration request (YnA) to E ² PROM was executed, E ² PROM was out of order or exceeded its write limit (10,000 times).	Replace the module.	○	×
B902	Error in data link startup by E ² PROM parameter	Data link start request by E ² PROM parameter (YnB) was executed even though the parameter was not registered in E ² PROM.	Register the parameter to E ² PROM by a parameter entry request (YnA).	○	×
B903 *1	Transient request error	The transient request was send to the station where the area was not reserved for the communication buffer.	Reserve the area for the communication buffer by parameters.	○	○

*1: Error code added to the function version B or later.

*2: Error code added to the software version J (manufactured in Jan., 1998) or later.

Error code (hex)	Error details	Cause of error occurrence (Details)	Corrective action	Detection possibility	
				Master station	Local station
B904 * 1	Communication buffer size setting error	The communication buffer size setting for the corresponding station is out of the specified range, when dedicated instructions are executed.	Set the communication buffer size of the corresponding station within the specified range.	○	○
B905 * 1	Transient data length error	The transient data length is larger than the communication buffer size of the corresponding station, when dedicated instructions are executed.	Set the communication buffer size of the corresponding station larger than the transient data length.	○	○
B907 ^H * 3	Execution disabled during data link	E ² PROM erasure request (YnD: ON) was executed during data link (SB006E: ON).	Execute a data link stop using SW0002.	○	×
B912 ^H * 3	No registration area	The parameter registration request to E ² PROM (YnA: ON) was executed in excess of a maximum of 127 registration times.	Execute the E ² PROM erasure request (YnD: ON), switch power off, or reset the CPU.	○	×
B913 ^H * 3	E ² PROM fault	The parameter registration request to E ² PROM (YnA: ON) was executed but E ² PROM is faulty.	Change the module.	○	×
BA19	Corresponding station error	The corresponding test station cannot be communicated during line test 2.	Check the cable and corresponding station.	○	×
BA1B	All station error	The communication error resulted for all stations in line test 1.	Check the cable.	○	×
BBC1	Mode setting error (switch)	The local station's mode setting switch is set to "1".	Set to "0".	×	○
BBC2	Station number setting error (switch)	Module's station number setting switch is set out of the range of "0 to 64".	Set it in the range of "0 to 64".	○	○
BBC3	Transmission speed setting error (switch)	Module's transmission speed setting switch is set out of the range of "0 to 4".	Set it in the range of "0 to 4."	○	○
BBC4	Station type change error (station number)	An attempt was made to change the master station (0) to the local station (1 to 64), or the local station (1 to 64) to the master station (0) by executing a module reset (Yn4).	Change by resetting the PC CPU.	○	○
BBC5	Master station overlap error	Master station already exists.	Review the station number setting switch.	○	×
BBC6	Mode change error	An attempt was made to change the mode from 0 or 2 to the test mode by executing a module reset (Yn4).	Change by resetting the PC CPU.	○	○
BBC7	Module error	Module is defective.	Replace the module.	○	○
BFFE	CPU watchdog time up	The response from the CPU is timed out.	Check the object of the access.	○	○

* 1: Error code added to the function version B or later.

* 3: Error code added to the software version E (manufactured in Aug., 2001) or later of the A1SJ61BT11.

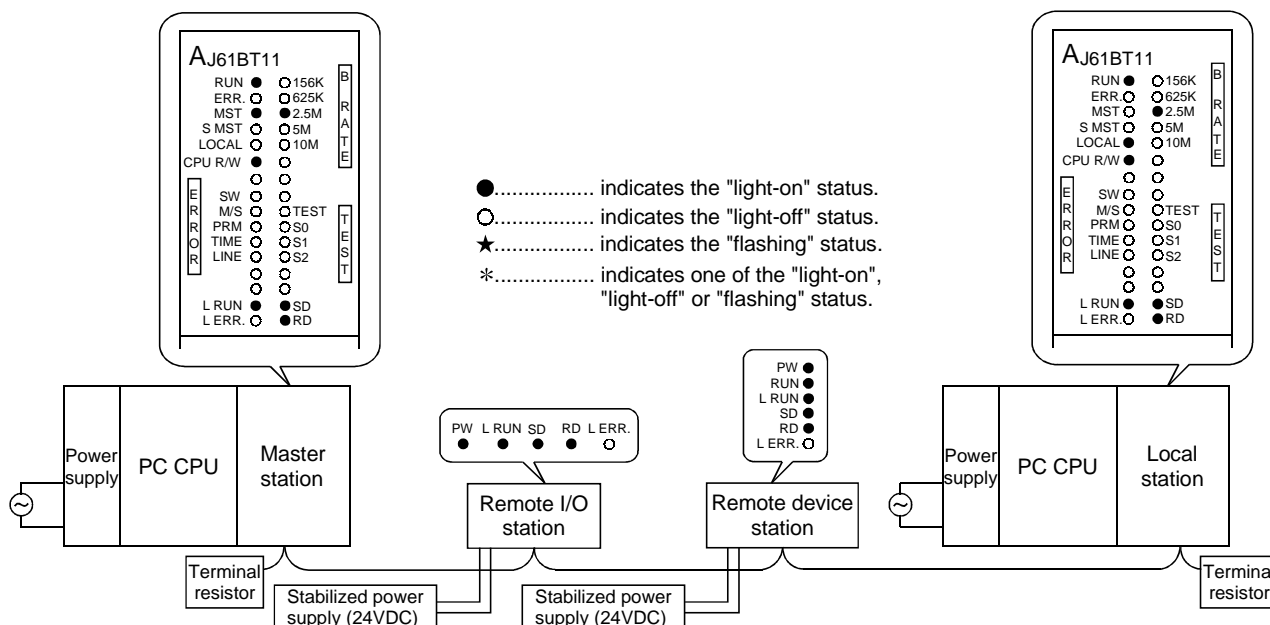
13.4 LED Display Status

The LED display status of each station for each data-link (system) status is shown below, where the transmission speed is set at 2.5 Mbps.

Refer to Troubleshooting.

13.4.1 When data link is normal

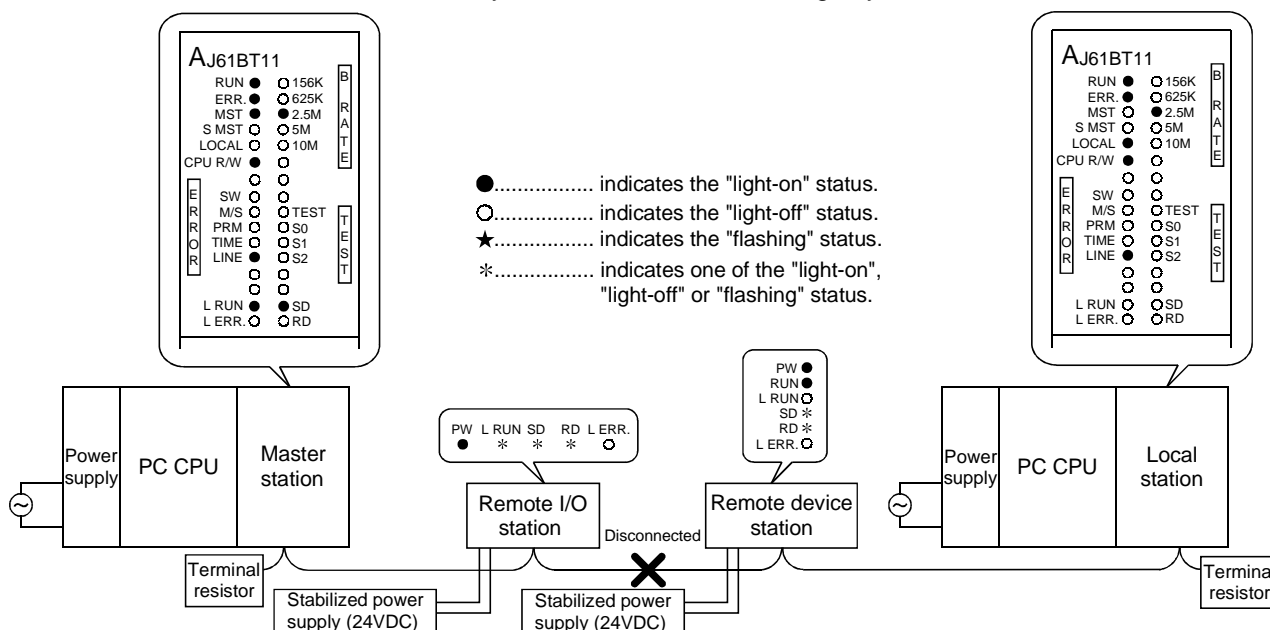
The "PW", "RUN", "L RUN", "SD" and "RD" LEDs are on.



13.4.2 When a cable is disconnected

Data link for all the stations is lost.

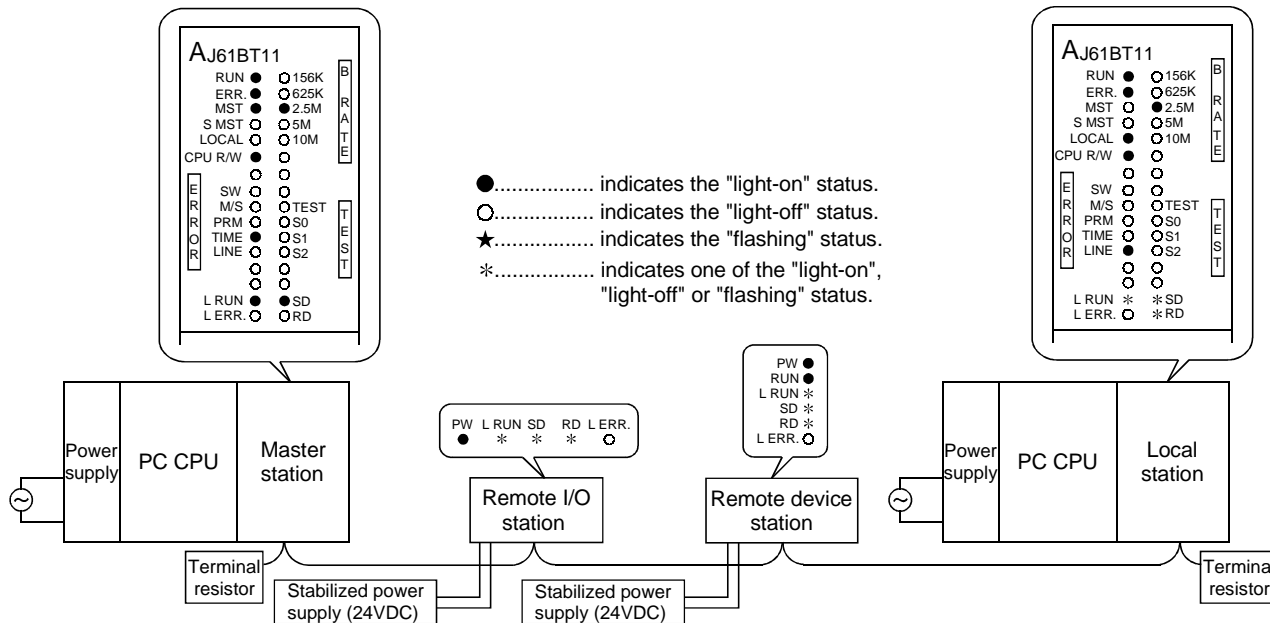
You cannot identify the location of wire breakage by the LED indications.



13.4.3 When a cable is shorted

Data link for all the stations is lost.

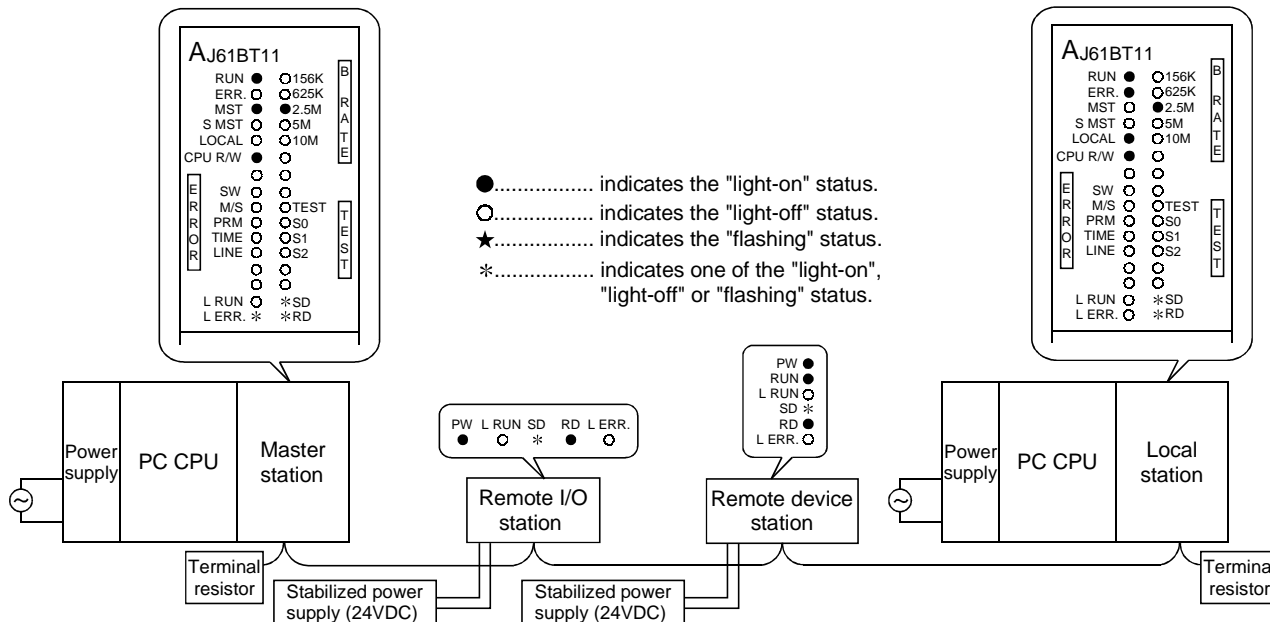
You cannot identify a short circuit occurred by the LED indications.



13.4.4 When the link is stopped at the master station

All stations will not be able to perform data link.

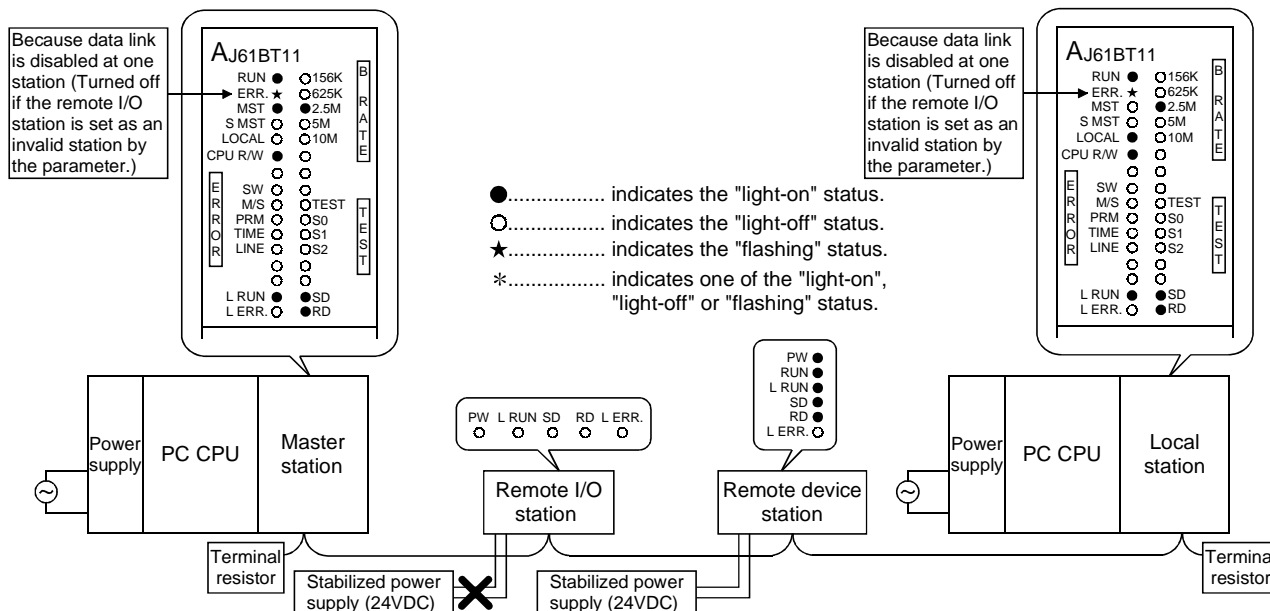
The "L RUN" LED turns off for all stations except for the master station.



13.4.5 When power supply to a remote I/O station is turned off

Data link is continued excluding that remote I/O station.

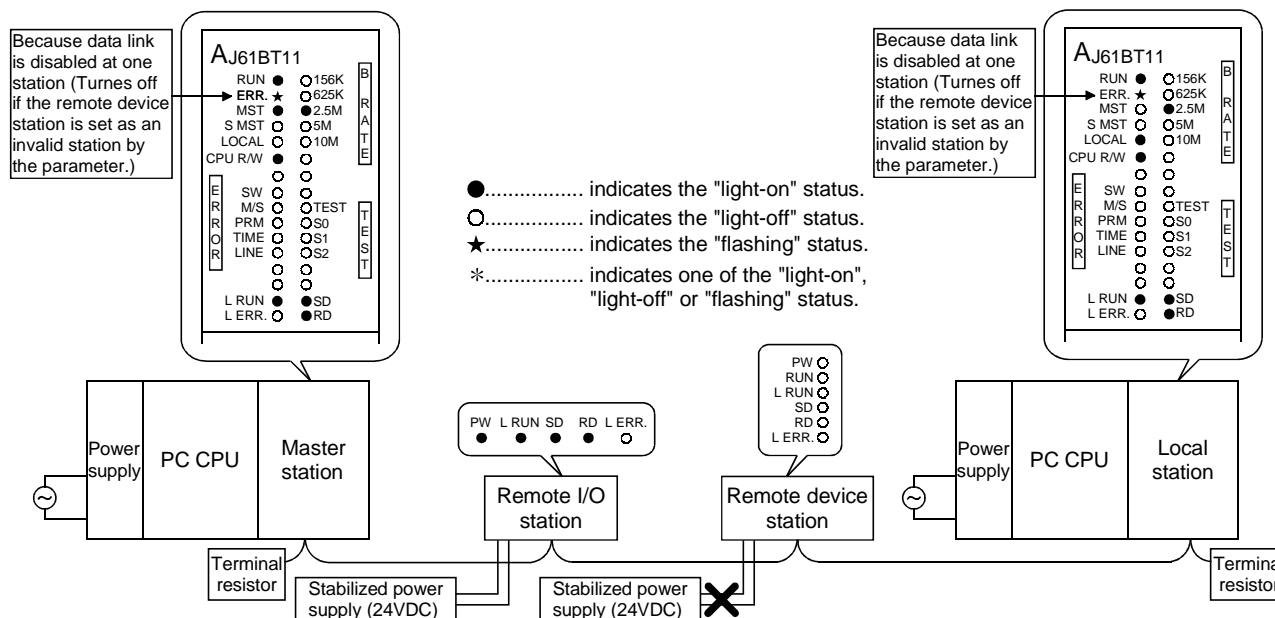
"ERR." LEDs at the master station and the local station flash.



13.4.6 When the power supply to a remote device station is turned off

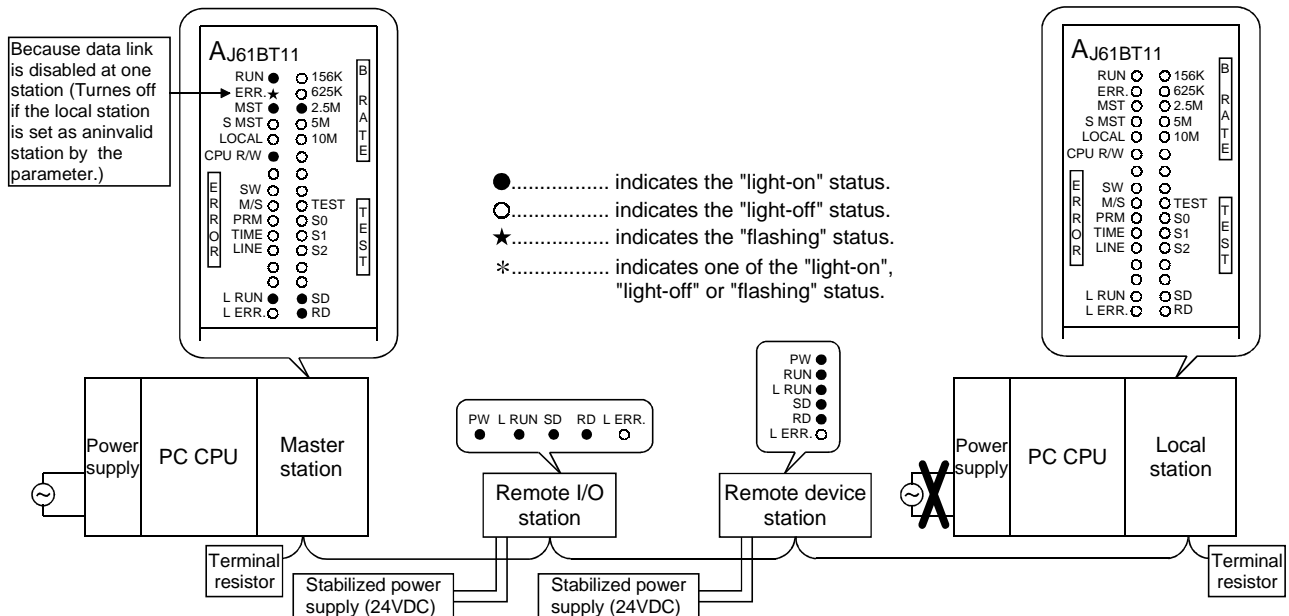
Data links is continued excluding that remote device station.

The "ERR." LEDs at the master station and the local station flash.



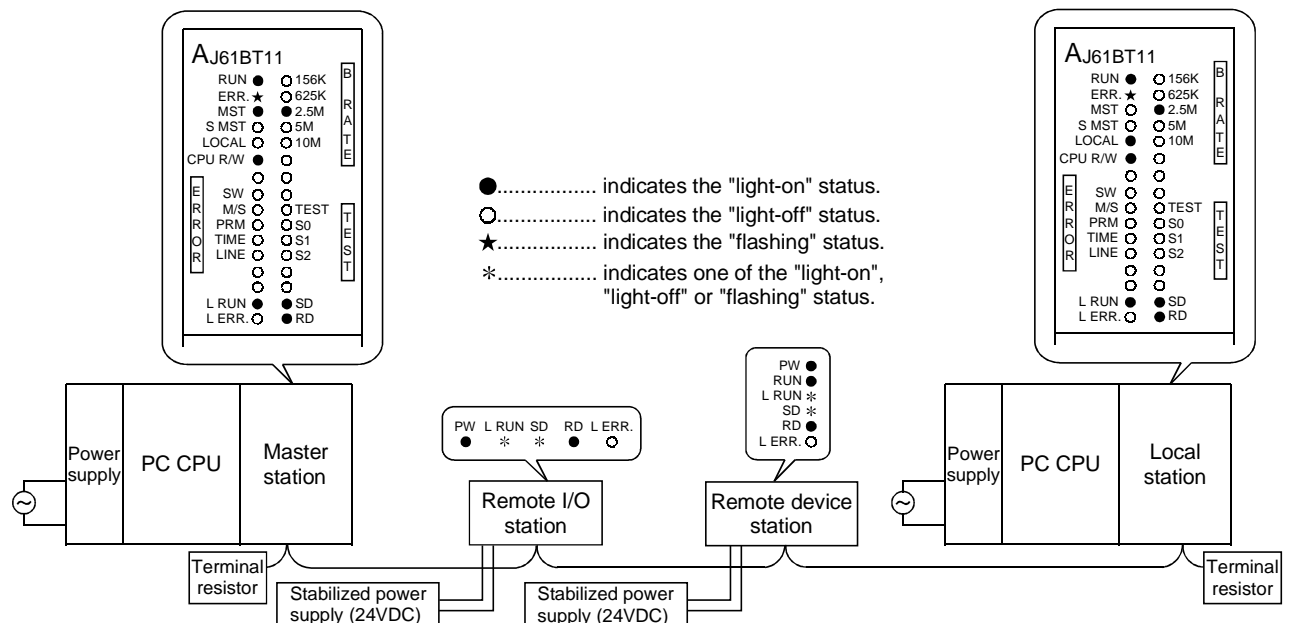
13.4.7 When the power supply to the local station (PC CPU) is turned off

Data link is continued excluding the local station.
The "ERR." LED at the master station flashes.



13.4.8 When the station numbers are duplicate

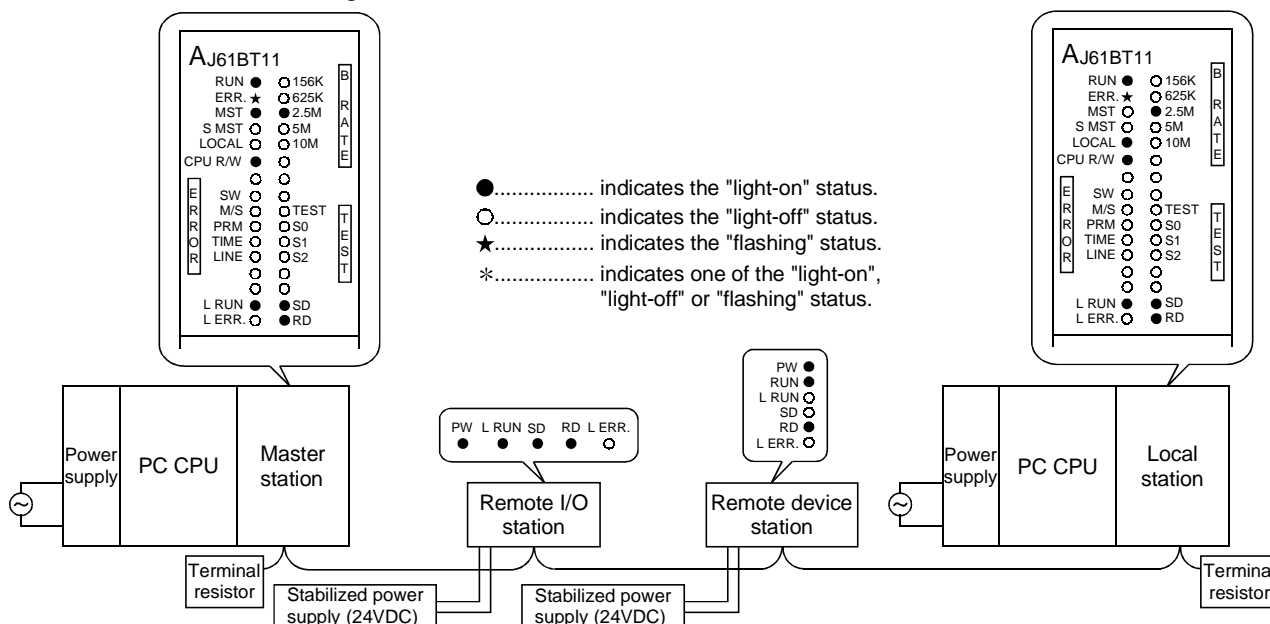
This is a case where the settings for a remote I/O station and a remote device station are duplicate. A skipped number (no slave station exists) result in the system because of overlapped station number, so the "ERR." LED on the master station flashes.



13.4.9 When the transmission speed is set incorrectly

This is a case where the transmission speed for the remote device station is set incorrectly.

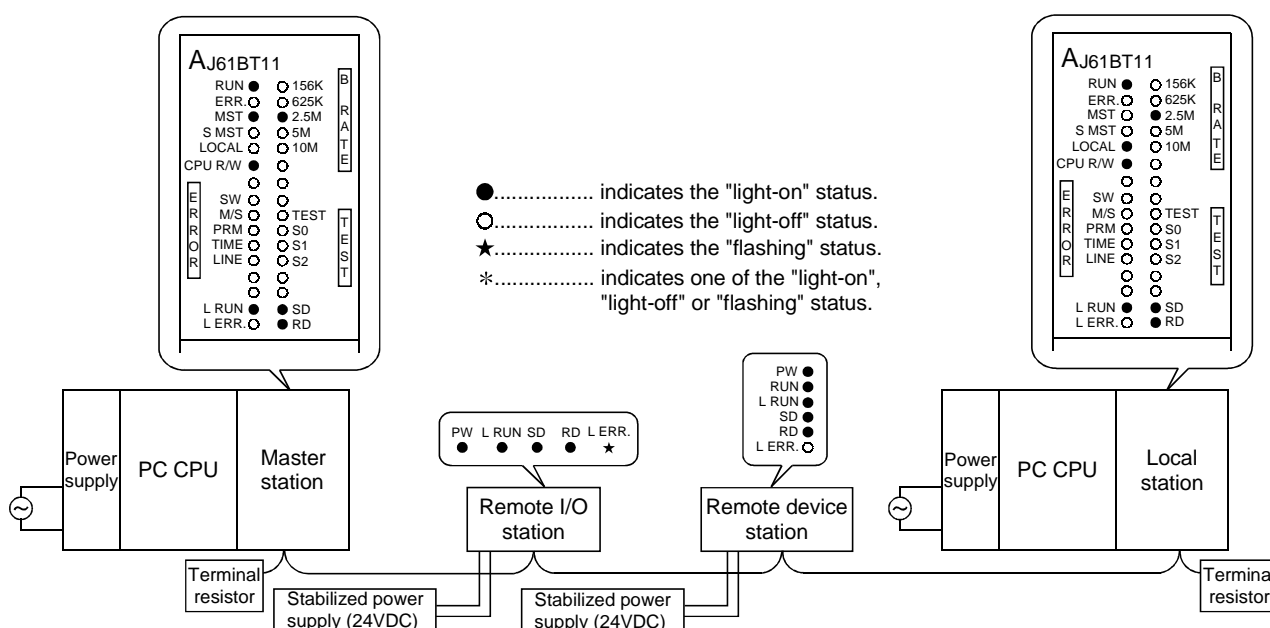
The "L RUN" LED for the remote device station with the incorrect transmission-speed setting turn off.



13.4.10 When the switch setting is changed during data link

This is a case where the switch setting for the remote I/O station was changed.

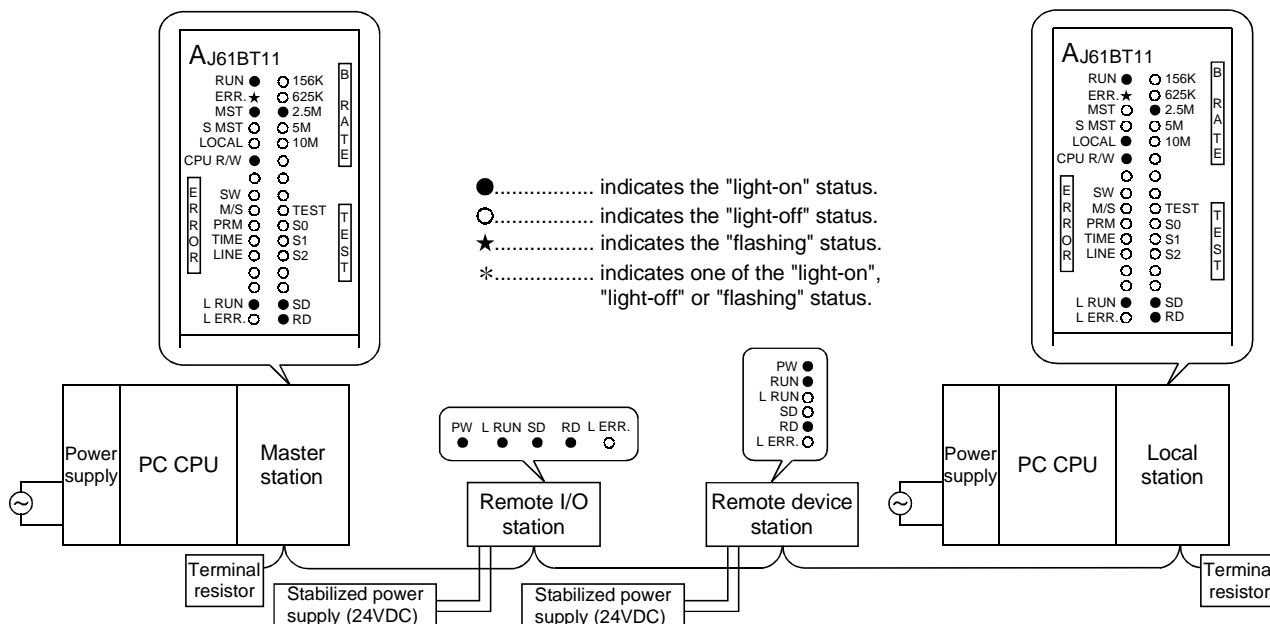
The "L ERR." LED for the remote I/O station whose switch setting was changed flashes. However, data link can be continued. Also, if returned to the previous state, "L ERR" turns off.



13.4.11 When data link is started with the switch set outside the range

This is a case where data link was started with the switch set outside the range.

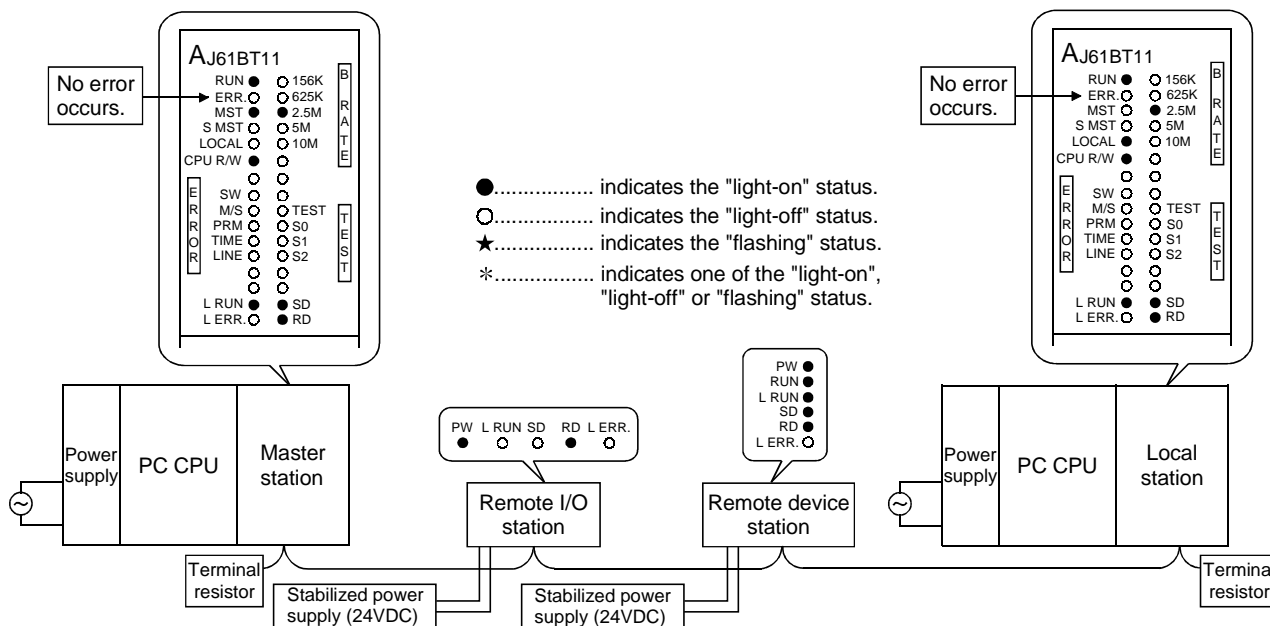
The "L RUN" and "SD" LEDs at the remote device station turn off and "L ERR." LED is turn on.



13.4.12 When the remote I/O station is not set by the parameter (i.e., is set as reserved)

No data links can be performed with the remote I/O station at all, and no error occurs.

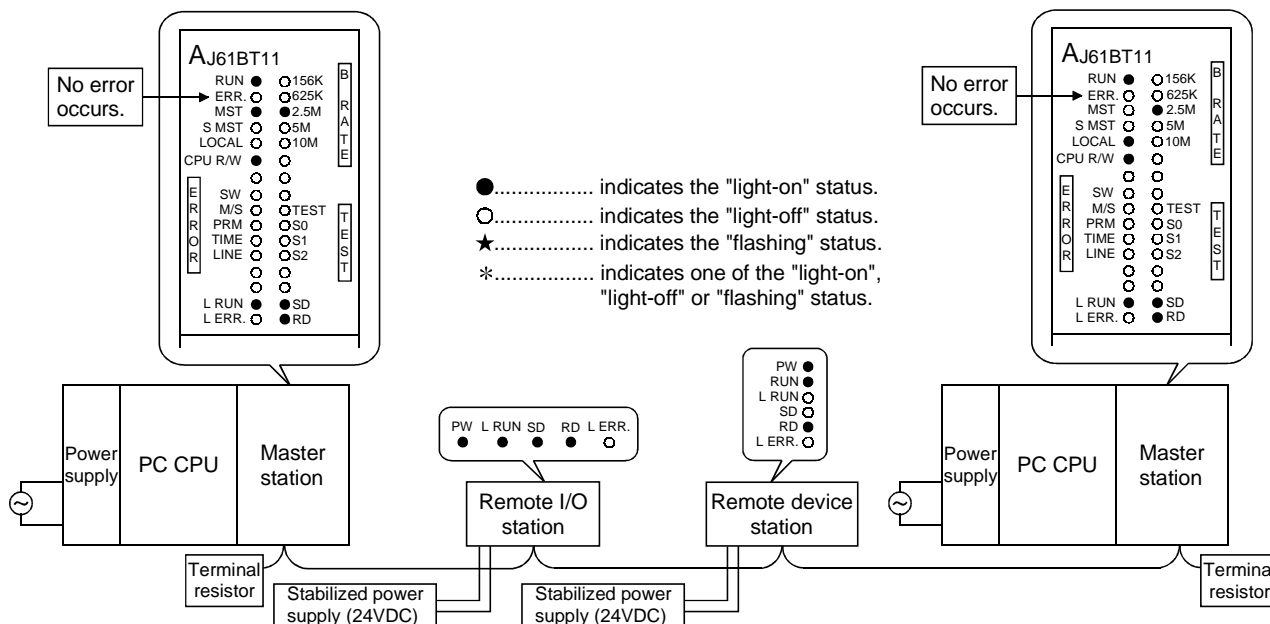
The "L RUN", "SD" LEDs at the remote I/O station turn off.



13.4.13 When the remote device station is not set by the parameter (i.e., is set as reserved)

No data link can be performed with the remote device station at all, and no error occurs.

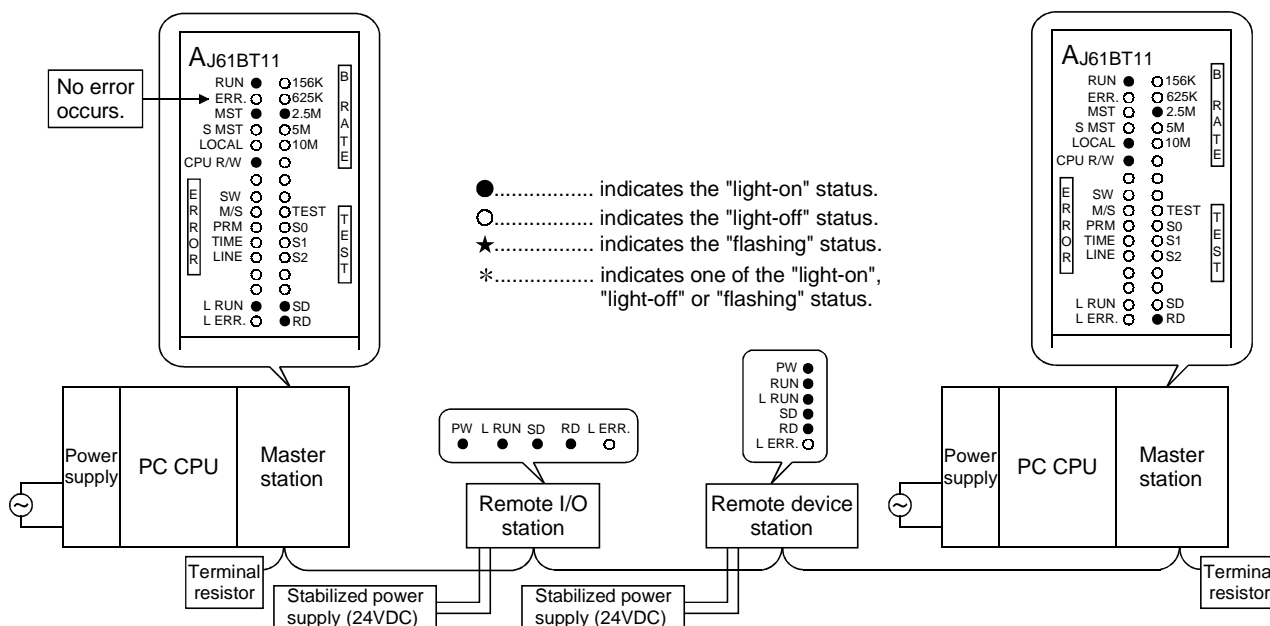
The "L RUN", "SD" LEDs at the remote device station turn off.



13.4.14 When the local station is not set by the parameter (i.e., is set as reserved)

No data link can be performed with the local station at all, and no error occurs.

The "L RUN", "SD" LEDs at the local station turn off.



14. Overview (Function Version B or Later)

The functions available with the master and local modules depend on their function versions and CPU types, as shown in Table 14.1.

Table 14.1 List of available functions with different function versions

Function	Description	Detailed description	Function version	
			A	B or later
Parameter registration	CPU module	The method to use dedicated instructions to set the CC-Link parameters and receive notification when the power is turned on or at STOP → RUN.	—	○ *1*2
	Buffer memory	The method to write directly into the buffer memory in the module and receive notification.	○	○
	E ² PROM	The method to register to the E ² PROM in the module and receive notification.	○	○
Automatic refresh		RX, RY and other cyclically transmitted data can be refreshed to a desired device through the END processing, using dedicated instructions.	—	○ *2*3
Scan synchronization	Synchronous mode	Data link can be performed using the scan synchronized with the sequence program.	—	○ *1*2
	Asynchronous mode	Data link can be performed using the scan not synchronized with the sequence program.	○	○
Cyclic transmission	Bit transmission	Data communication can be performed at 32 points per station.	○	○
	Word transmission	Data communication can be performed at 4 points per station.	○	○
Transient transmission	Dedicated instructions	Transient transmission can be performed to the intelligent device and local station using dedicated instructions.	—	○ *1*2
		Device can be read from/written to the CPU of the specified station using dedicated instructions.	—	○ *1*2 *4
Remote I/O net mode		Communication can be performed only with the remote I/O station without setting parameters.	—	○*5
Reserved station setting		Stations to be connected later can be skipped and set in advance.	○	○
Error detection invalid station setting		Data link error can be ignored when data link is disabled at any station.	○	○
Temporary error invalid station setting		Replacement of modules can be performed online without detecting an error at the corresponding remote station.	—	○
Module reset		Only CC-Link can be reset when changing switches, etc., without stopping the CPU.	○	○
Data link stop/restart		Stop/restart can be performed during data link.	○	○
RAS	Automatic return	The station which has been disconnected from data link can be returned automatically to the data link through normal return.	○	○
	Standby master	Data link can be continued when an error occurs at the master station, by switching to the standby master station.	—	○
	Slave station disconnection	The station at which data link has been disabled can be disconnected so that data link can be continued using normal stations only.	○	○
	Confirmation of data link status	The data link status can be confirmed using the special relay and special register.	○	○
	Off-line test	A hardware test, line test, etc., can be performed.	○	○

POINT
<p>The functions denoted *1 can be used only when the following CPUs are used:</p> <ul style="list-style-type: none">• A1SHCPU, A1SJHCPU, A2SHCPU : Not limited by software version• A2UCPU(S1), A3UCPU, A4UCPU : Software version Q (manufactured in Jul., 1999) or later• A2ASCPU(S1) : Software version E (manufactured in Jul., 1999) or later• A2USHCPU-S1 : Software version L (manufactured in Jul., 1999) or later <p>The functions denoted *2 cannot be used when a remote I/O station of MELSECNET/10 is installed.</p> <p>The functions denoted *3 can be used only when the following CPUs are used.</p> <ul style="list-style-type: none">• A1SHCPU, A1SJHCPU, A2SHCPU : Not limited by software version• A2UCPU (S1), A3UCPU, A4UCPU : Software version K (manufactured in Aug.,1998) or later• A2ASCPU (S1) : Software version A (manufactured in Aug., 1998) or later• A2USHCPU-S1 : Software version G (manufactured in Aug., 1998) or later <p>The functions denoted *4 can be used for software version J (manufactured in Jan., 1998) or later.</p> <p>The functions denoted *5 can be used through a combination of the master module of software version P (manufactured in Sep., 1998) or later and the CPUs listed in Section 15.7.</p>

15. Functions (Function Version B or Later)

The functions added in the function version B or later are explained.

15.1 List of Functions

A list of functions is shown in Table 15.1.

Table 15.1 List of functions

Item	Function overview	Reference section	Availability of functions		
			Master station	Local station	Waiting master station
Parameter registration function	The function to set values as part of the parameters in the CPU, using dedicated instructions. There are two types of parameters as below: • Network parameters • Automatic refresh parameters	Section 15.2	○	○ * 1	○ * 1
Automatic refresh function	RX, RY and other cyclically transmitted data can be refreshed to a desired device through the END processing, using dedicated instructions.	Section 15.3	○	○	○
Scan synchronous function	Synchronous mode Data link can be performed using the scan synchronized with the sequence program.	Section 15.4	○	×	×
	Asynchronous mode Data link can be performed using the scan not synchronized with the sequence program.	Section 15.4	○	○	○
Standby master function	Data link can be continued when an error occurs at the master station, by switching to the standby master station.	Section 15.5	×	×	○
Dedicated instructions	Transient transmission can be performed to the intelligent device and local stations using dedicated instructions. Dedicated instructions also facilitate read/write of data with handshake from/to remote devices.	Section 15.6	○	○	○
	Device can be read from/written to the CPU of the specified station using dedicated instructions		○ * 2	○ * 2	○ * 2
Remote I/O net mode	Communication can be performed only with the remote I/O station without setting parameters.	Section 15.7	○ * 3	×	×
Temporary error invalid station specification function	Replacement of modules can be performed online without detecting an error at the corresponding remote station.	Section 15.7	○	×	×

* 1 It is not necessary to set the network parameters.

* 2 It can be used with software version J (manufactured in Jan., 1998) or later.

* 3 It can be used with software version P (manufactured in Sep., 1998) or later.

15.2 Parameter Registration Function

This is a function to set values as part of the parameters in the CPU, using dedicated instructions. There are two types of parameters: network parameters and automatic refresh parameters.

As for dedicated instructions, refer to the programming manual of the CPU.

POINT

- The "Y" at the master module will be ignored while using the parameter registration function.

15.2.1 Network parameters

Network parameters are used for performing data link. The items that are set by the network parameters are shown in Table 15.2.

Table 15.2 Network parameters

Setting item	Description	Buffer memory address	
		Hex.	Dec.
Number of connected modules	Sets the number of remote stations, local stations, intelligent device stations, and waiting master station connected to the master station. (Includes reserved stations.) Default value : 64 (modules) Setting range : 1 to 64 (modules)	1H	1
Number of retries	Sets the number of retries during the communication error. Default value : 3 (times) Setting range : 1 to 7 (times)	2H	2
Number of automatic return modules	Sets the number of remote stations, local stations, intelligent device stations, and standby master station that can be returned by one link scan. Default value : 1 (module) Setting range : 1 to 10 (modules)	3H	3
Standby master station specification	Specifies the station number of the standby master station. Default value : 0 (0: No standby master station specified) Setting range : 0 to 64 (0: No waiting master station specified.)	4H	4
Operation specification when CPU becomes faulty	Specifies the data link status when a master station PC CPU error occurs. Default value : 0 (stop) Setting range : 0 (stop) 1 (continue)	6H	6
Scan mode specification	Specifies the synchronous or asynchronous mode for sequence scan. Default value : 0 (asynchronous) Setting range : 0 (asynchronous) 1 (synchronous)	—	—
Delay time setting	Sets the link scan interval. (Unit: 50μs) Used to reduce variation in transient transmission time. Default value : 0 (0: Not specified) Setting range : 0 to 100 (0: Not specified)	8H	8
Reserved station specification	Specifies the reserved station. Default value : 0 (Not set) Setting range : Turn on the bit corresponding to the station number.	10H to 13H	16 to 19
Error invalid station specification	Specifies the error invalid station. Default value : 0 (Not set) Setting range : Turn on the bit corresponding to the station number.	14H to 17H	20 to 23
Station information	<p>Sets the type of the connected remote stations, local stations, intelligent stations, and standby master station. Default value : 0101H (remote I/O station, 1 station occupied, station number 1) to 0140H (remote I/O station, 1 station occupied, station number 64) Setting range : See below.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> b15 to b12 b11 to b8 b7 to b0 </div> <div style="display: flex; justify-content: space-between; border-top: 1px solid black; border-bottom: 1px solid black;"> Station type Occupied stations Station No. </div> <div style="display: flex; justify-content: space-between; font-size: 0.7em; margin-top: 5px;"> <div style="width: 30%;"> 0 : Remote I/O station 1 : Remote device station 2 : Intelligent device station, Local stations and standby master station 3 : Reserved station </div> <div style="width: 30%;"> 1 : 1 station occupied 2 : 2 stations occupied 3 : 3 stations occupied 4 : 4 stations occupied </div> <div style="width: 30%;"> 1 to 64 (01H to 40H) </div> </div> </div>	20H (first module) to 5FH (64th module)	32 (first module) to 95 (64th module)

Table 15.2 Network parameters (continued)

Setting item	Description	Buffer memory address	
		Hex.	Dec.
Allocation of communication buffer and automatic update buffer	<p>Specifies the size of the buffer memory that is allocated during the transient transmission to local, standby master or intelligent device stations.</p> <p>Default value</p> <p>Send buffer: 40_H (64) (word)</p> <p>Receiving buffer: 40_H (64) (word)</p> <p>Automatic updating buffer: 80_H (128) (word)</p> <p>Setting range</p> <p>•Send/receive buffer</p> <p>: 0_H (0) (word) (no setting) or 40_H (64) (word) to 1000_H (4096) (word)</p> <p>Note that the total size of the send/receive buffer is within 1000_H (4096) (word).</p> <p>•Automatic update buffer</p> <p>: 0_H (0) (word) (no setting) or 80_H (128) (word) to 1000_H (4096) (word)</p> <p>Note that the total size of the automatic update buffers is within 1000_H (4096) (word).</p>	<p>80_H(send buffer)</p> <p>81_H(receive buffer)</p> <p>82_H(automatic update buffer)</p> <p>to</p> <p>CB_H (send buffer)</p> <p>CC_H(receive buffer)</p> <p>CD_H(automatic update buffer)</p> <p>The first intelligent device</p> <p>The 26th intelligent device</p>	<p>128(send buffer)</p> <p>129(receive buffer)</p> <p>130(automatic update buffer)</p> <p>to</p> <p>203(send buffer)</p> <p>204(receive buffer)</p> <p>205(automatic update buffer)</p> <p>The first intelligent device</p> <p>The 26th intelligent device</p>

POINT

- (1) The data link start request need not be set.
- (2) For the communication buffer size, specify the size of the data to be sent or received plus 7 words.
- (3) For the automatic update buffer size, allocate the size necessary for each intelligent device.

15.2.2 Automatic refresh parameters

Automatic refresh parameters are used to refresh all of the devices in the CC-Link to the CPU device during the END processing. The devices that can be set by the automatic refresh parameters are shown in Table 15.3.

Table 15.3 Automatic refresh parameters (Device that can be set)

CPU device CC-Link device	Bit device								Word device					
	X	Y	M	B	T	ST	C	F	D	W	T	ST	C	R
RX	○		○	○					○	○				○
RY		○	○	○	○	○	○		○	○	○	○	○	○
RWw			○	○					○	○				○
RWr			○	○					○	○				○
SB			○	○					○	○				○
SW			○	○					○	○				○

15.3 Automatic Refresh Function

This function uses dedicated instructions to refresh RX, RY and other cyclic transmitted data to a desired device through the END processing.

This function eliminates the need to access the buffer memory using the FROM/TO instruction.

As for dedicated instructions, refer to the programming manual of the CPU.

15.4 Scan Synchronous Function

This function sets whether link scan is synchronized with the sequence scan, using the network parameter setting.

15.4.1 Synchronous mode

Performs data link using the scan synchronized with the sequence program. The operation overview in the synchronous mode is shown in Figure 15.1.
In general, the transmission delay is smaller in the synchronous mode than in the asynchronous mode. Select the synchronous mode if the transmission delay is noticeably long.
However, as sequence scan is synchronized with link scan in the synchronous mode, the link scan is prolonged if the sequence scan is long. In this case, select the asynchronous mode.

Important

While in the synchronous mode, the scan time must not exceed the time specified for the corresponding transmission speed, as shown below. If the specified time is exceeded, a time out error occurs at each station and the station becomes faulty.

Transmission speed	Scan time
10Mbps	50ms
5Mbps	50ms
2.5Mbps	100ms
625kbps	400ms
156kbps	800ms

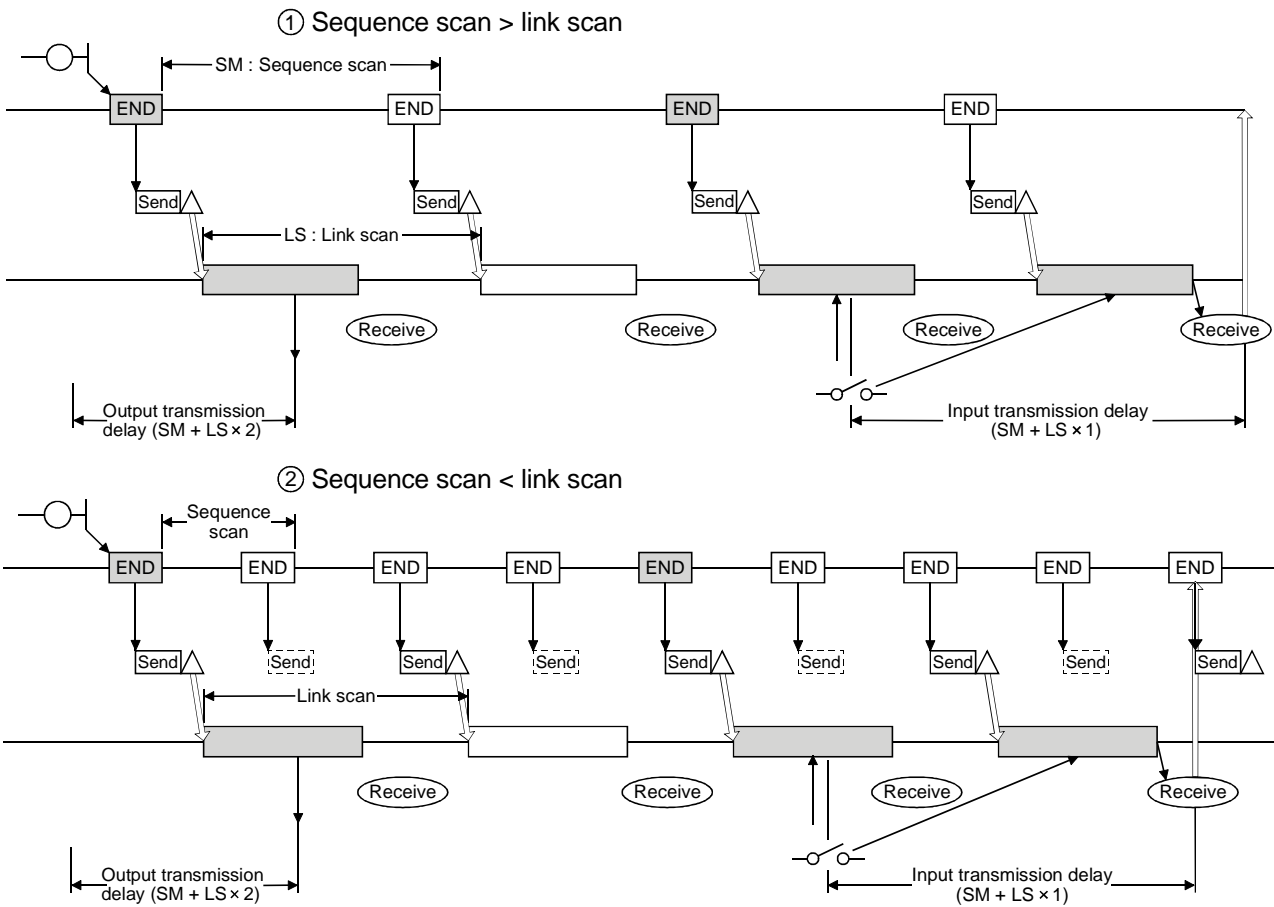


Figure 15.1 Operation overview in the synchronous mode

15.4.2 Asynchronous mode

Performs data link without synchronizing with the sequence program. The operation overview in the asynchronous mode is shown in Figure 15.2.

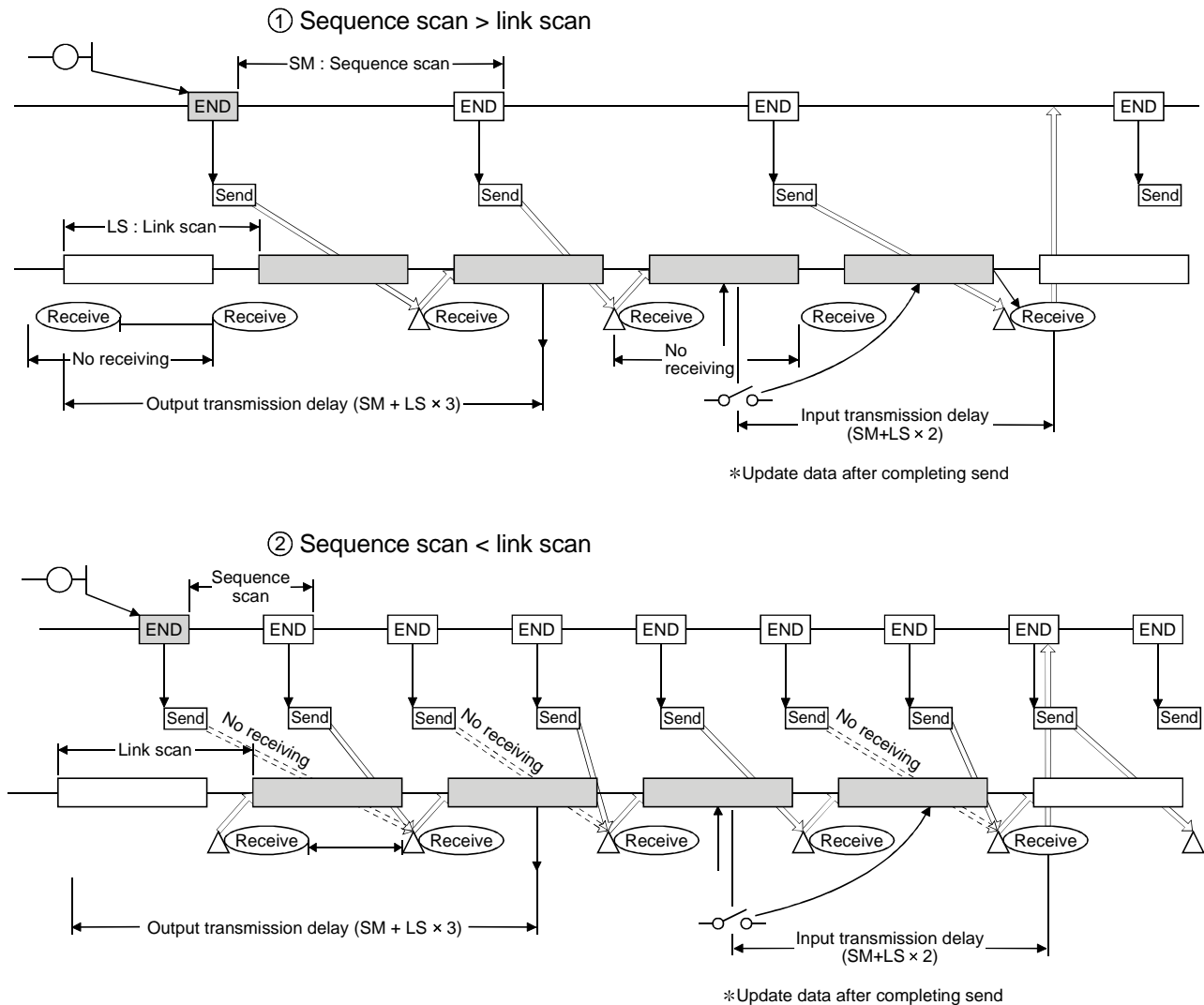


Figure 15.2 Operation overview in the asynchronous mode

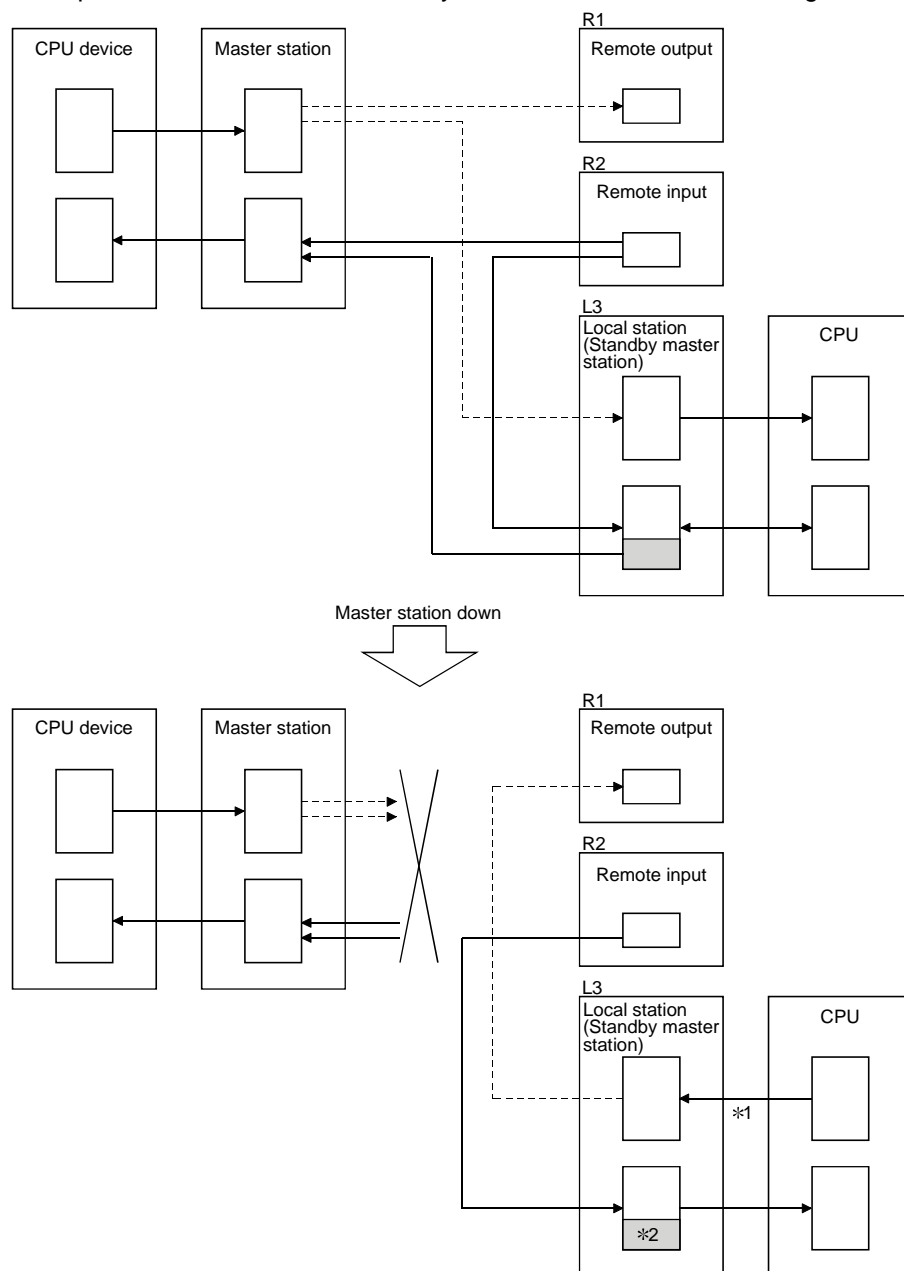
15.5 Standby Master Function

This function allows data link to continue when an error occurs at the master station, by switching to the standby master station.

However, switching from the standby master station to the master station will not occur automatically when the master station returns.

15.5.1 Operation overview

The operation overview of the standby master function is shown in Figure 15.3.



*1: Accepts refresh from the CPU by the switching instruction of the special link relay (SB0001).

*2: The host area is retained/cleared (by the DIP switch).

Figure 15.3 Operation overview of the standby master function

15.5.2 Settings on using the standby master function

The settings on using the standby master function are as follows:

- (1) Setting of the standby master station
 - 1) Set the station number setting switch in the range of 1 to 64.
 - 2) Turn on the condition setting switch SW1.
- (2) Setting of the master station
 - 1) Change the standby master station specification in the network parameter to the station number of the standby master station.
- (3) Setting of the local station and remote station

Same as when no standby master station is used.

Important
Do not use the station number "64" in the system where a standby master station exists. If this number is used, the station to which the number "64" was assigned cannot perform normal communication.

15.5.3 Special link relays/resisters (SB,SW) relating to the standby master function

The special link relays and special link registers relating to the standby master function are explained.

They are stored in the buffer memory.

(1) Special link relays (SB)

The special link relays (SB) relating to the standby master function are as follows. The figures in parentheses in the number column indicate buffer memory address and bit location.

Example: When buffer memory address is 5E0H and bit location is 0: (5E0H, b0)

Table 15.4 List of link special relays relating to the standby master function

Number	Name	Description	Availability (○ : available, × : not available)	
			Master station	Standby master station
SB0001 (5E0H, b1)	Master station switch data link start	Switches the output information from the standby master station to the master station to start the data link. OFF : No request ON : Request	×	○
SB0042 (5E4H, b2)	Master station switch data link start acceptance status	Indicates the acceptance status specified for switching data link start from the standby master station to the master station. OFF : Not accepted ON : Accepted	×	○
SB0043 (5E4H, b3)	Master station switch data link start complete status	Indicates the acceptance complete status specified for switching data link start from the standby master station to the master station. OFF : Not completed ON : Completed	×	○
SB0070 (5E7H, b0)	Master station data link status	Indicates the data link status. OFF : Data link by the master station ON : Data link by the standby master station	○	○
SB0071 (5E7H, b1)	Standby master station information	Indicates whether there is standby master station or not. OFF : No ON : Yes	○	○

(2) Special link registers (SW)

The special link registers (SW) relating to the standby master function are as follows.

The figures in parentheses in the number column indicate buffer memory address.

Table 15.5 List of link special registers relating to the standby master function

Number	Name	Description	Availability (○ : available, × : not available)	
			Master station	Standby master station
SW0043 (643H)	Master station switch data link start result	Stores the results of execution of the master station switch data link start instruction by SB0001. 0 : Normal Other than 0 : Stores error code (Refer to Section 13.3)	×	○
SW0073 * (673H)	Standby master station number	Stores the standby master station number. 1 to 63 (stations)	○	○

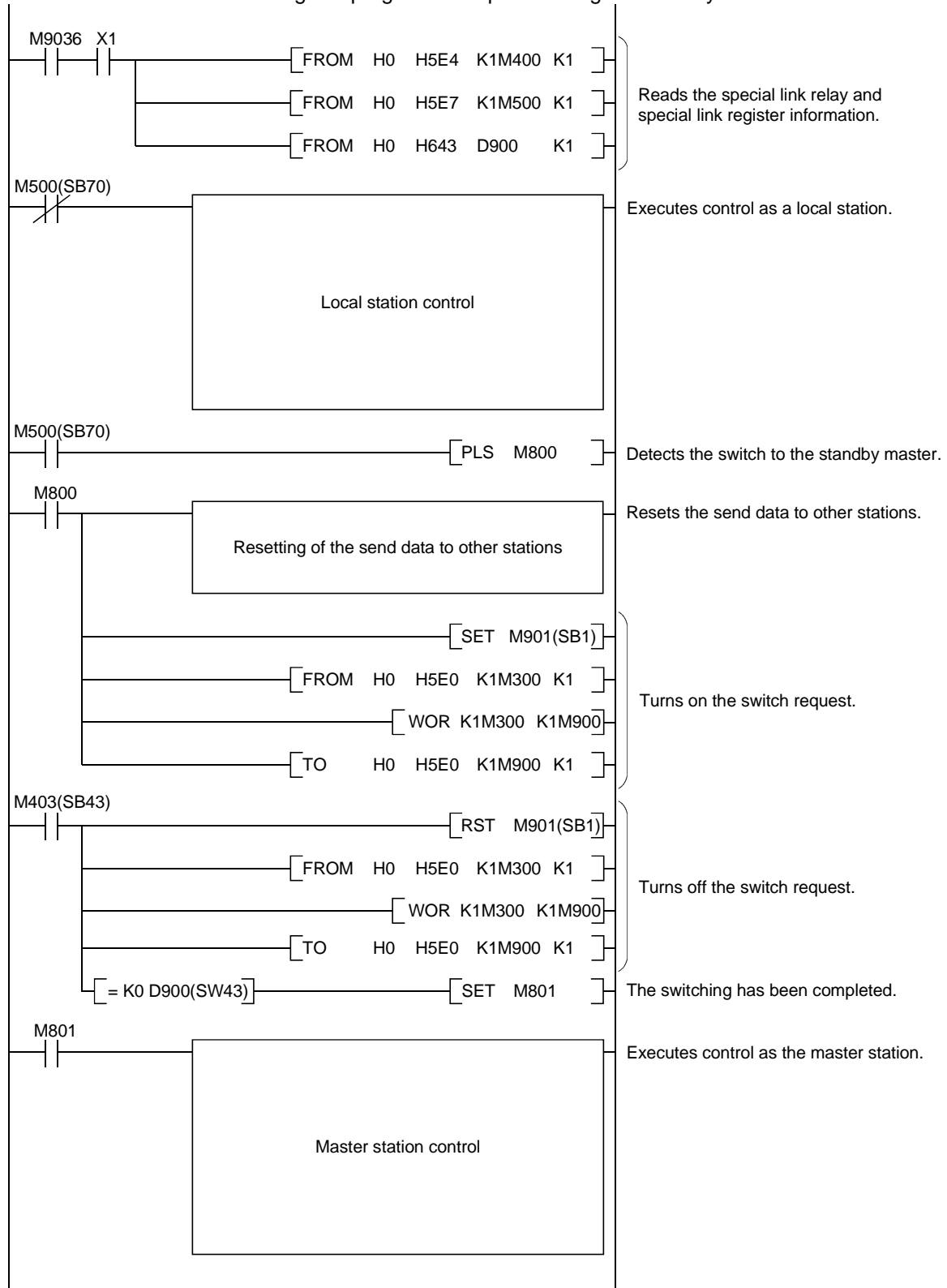
15.5.4 Notes on using the standby master function

The following are the notes on using the standby master function.

- ① There can be only one standby master station in a data link system.
- ② The total number of stations is 64 including the standby master station. The number of occupied stations for the standby master station is one or four.
- ③ Parameter registration to the standby master station is not necessary.
- ④ If an error is detected at the master station in the initial status (before parameter communication starts), switching to the standby master station will not be executed.
- ⑤ When the master station becomes faulty, the polling issuing authority will switch automatically to the standby master station, but the cyclic data transmission will not switch. The switch must be enabled using the sequence program. Once the switch has been enabled, the information up to the error detection at the master station will be outputted to each remote station.
- ⑥ Parameters cannot be updated during the data link by the standby master station.
- ⑦ Once the standby master station fails, the master station cannot recover its normal operation even if the standby master station recovers its normal operation.
- ⑧ When the master station becomes faulty, and the polling issuing authority is switched to the standby master station, the standby master station number causes an error. (Applicable bits of SB0080 and SW0080 to SW0083 are turned ON)
When the standby master station is specified as the error invalid station, the error detection function may be disabled.

15.5.5 Program example on using the standby master function

The following is a program example on using the standby master function.



15.6 Dedicated Instructions

Transient transmission can be performed to the intelligent device station and local station using dedicated instructions.

Dedicated instructions also facilitate read/write of data with handshake from/to remote devices.

The dedicated instructions that can be used from different types of stations are shown in Table 15.6. Refer to the AnSHCPU/AnACPU/AnUCPU Programming Manual (Dedicate Instructions) for the detail of each instruction.

Table 15.6 List of available dedicated instructions at different stations

Applicable station	Instruction	Description	Availability (○ : available, × : not available)		
			Master station	Local station	Standby master station
Master station, local station	RLPA	Sets the network parameters. All items which cannot be set by RLPA instructions are operated by default.	○	×	×
	RRPA	Sets the automatic refresh parameters.	○	○	○
	RIRD	Reads data in the buffer memory of the specified station.	○	○	○
		Reads device data in the CPU of the specified station.	○*	○*	○*
	RIWT	Writes data into the buffer memory of the specified station.	○	○	○
		Writes data into the CPU device of the specified station.	○*	○*	○*
Intelligent device station	RIRD	Reads contents in the buffer memory of the specified station.	○	○	○
	RIWT	Writes data into the buffer memory of the specified station.	○	○	○
	RISEND	Writes data with handshake into the buffer memory of the specified station.	○	×	×
	RIRCV	Reads contents with handshake in the buffer memory of the specified station.	○	×	×
	RIFR	Reads contents in the automatic refresh buffer of the specified station. (Random access buffer can be specified.)	○	○	○
	RITO	Writes data into the automatic refresh buffer of the specified station. (Random access buffer can be specified.)	○	○	○

* It can be used with software version J (manufactured in Jan., 1998) or later.

POINT

- (1) Execute the dedicated instructions during data link.
If any of them is executed in the offline mode, an error does not occur but the dedicated instruction is not completed. After changing the offline mode to the online mode, reset the CPU.
- (2) When the dedicated instructions (RIRD, RIWT, RISEND, RIRCV) are used, RY(n+1)E and RY(n+1)F are used with the dedicated instructions. Therefore, the user must be careful not to rewrite these signal data.

15.7 Remote I/O Net Mode

When the system is configured only with the master station and the remote I/O stations, communication can be performed without setting parameters.

15.7.1 Features

When the system is configured only with the master station and the remote I/O stations, if the remote I/O net mode is used, the following advantages can be attained.

- (1) The network parameters are not required to be set.
- (2) The data link start request need not be set.
- (3) By a reduction in link scan time, the I/O response becomes higher than in the remote net mode.

15.7.2 Software version corresponding to master module and its CPU

Table 15.7 shows the software versions corresponding to the master modules and their CPUs in the remote I/O net mode.

Table 15.7 Software Version corresponding to Master Module and Its CPU

Master module and CPU type	Corresponding software version
AJ61BT11, AJ61QBT11, A1SJ61BT11, A1SJ61QBT11	P (manufactured on Sep., 1998) or later
A2UCPU (S1), A3UCPU, A4UCPU	K (manufactured on Aug., 1998) or later
A2ASCPU (S1)	A (manufactured on Aug., 1998) or later
A2USHCPU-S1	G (manufactured on Aug., 1998) or later
A1SHCPU, A2SHCPU, A1SJHCPU	L (manufactured on Sep., 1998) or later

15.7.3 Set items

When the remote I/O net mode is used, set the following three items.

- (1) Set the master station's mode setting switch at 1 (remote I/O net mode).
- (2) Set the master station's station number setting switch at the last station number of the last remote I/O station.
- (3) Set the automatic refresh parameter using the RRPA instruction.

15.7.4 Link scan time

When the remote I/O net mode is used, the link scan time (LS) is given by the following expression.

$$LS = BT \{25.0 + (NI \times 4.0) + (N \times 28.0) + (ni \times 4.0)\} + ST \\ + \{ \text{Number of communication faulty stations} \times 48 \times BT \times \text{Number of retries} \} * [\mu s]$$

BT : Constant (transmission speed)

Transmission speed	156kbps	625kbps	2.5Mbps	5Mbps	10Mbps
BT	51.2	12.8	3.2	1.6	0.8

NI : Last station number (shall be the multiple of 8)

N : Number of connected modules

ni : Total number of occupied stations

ST: Constant

$$ST = 200 + (ni \times 20)$$

* : Only when there is a communication faulty station.

A difference in link scan time between the operations in the remote I/O net mode and the remote net mode (conventional mode) is shown below.

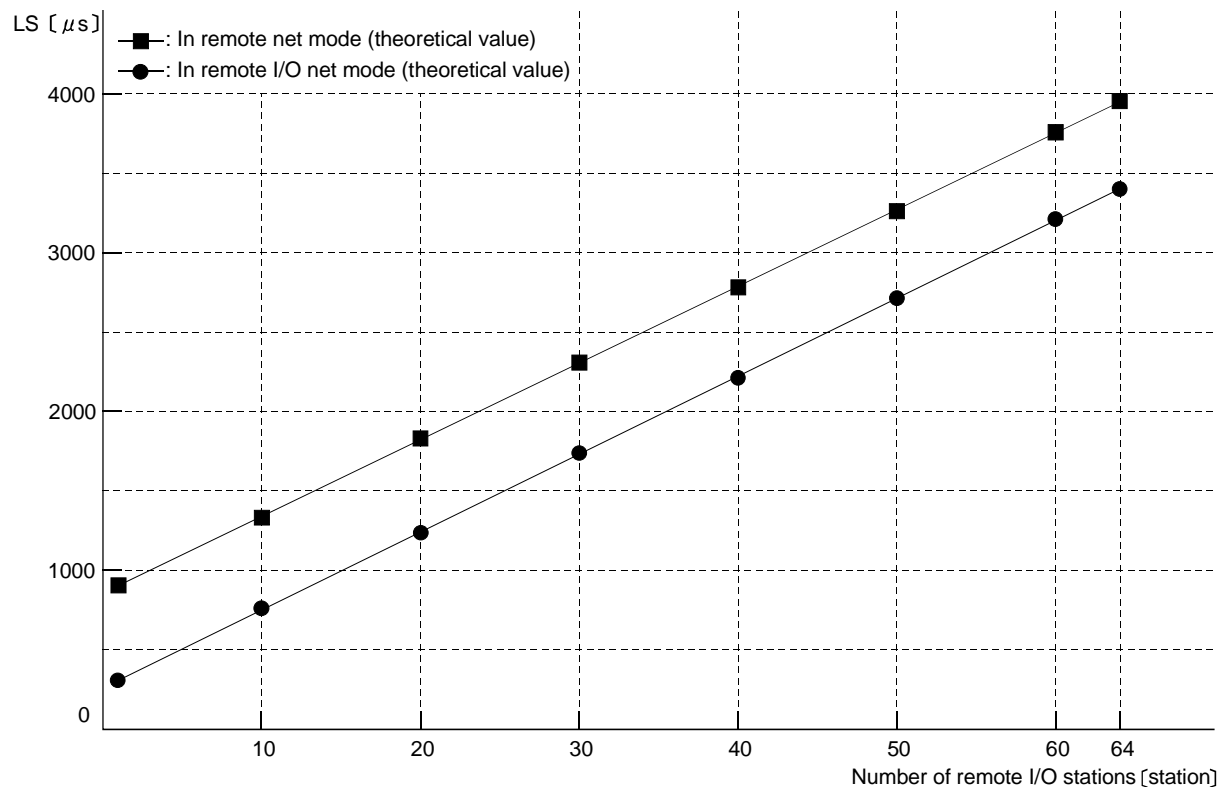


Figure 15.4 Link scan time

15.7.5 Precaution

Set the remote I/O station number sequentially. Otherwise the unset station will be detected as an error, thus affecting the link scan time.

15.8 Temporary Error Invalid Station Specification Function

Replacement of modules can be performed online without detecting an error of the corresponding remote station.

15.8.1 I/O status of the temporary error invalid station specification

All of the cyclic transmission data of the station specified as a temporary error invalid station will be refreshed.

When the station specified as a temporary error invalid station becomes faulty, input is retained and output is turned off.

15.8.2 Special link relays/registers (SB, SW) relating to the temporary error invalid station specification function

The special link relays and special link registers relating to the temporary error invalid station specification function are explained.
They are stored in the buffer memory.

(1) Special link relays (SB)

The special link relays (SB) relating to the temporary error invalid station specification function are as follows.

The figures in parentheses in the number column indicate buffer memory address and bit location.

Example: When buffer memory address is 5E0H and bit is 0: (5E0H, b0)

Table 15.8 List of special link relays relating to the temporary error invalid station specification function

Number	Name	Description	Availability (○ : available, × : not available)	
			Master station	Local station
SB0004 (5E0H, b4)	Temporary error invalid station request	Confirms the station which had been specified by SW0003 to SW0007 to temporary error invalid station. OFF : No request ON : Request	○	×
SB0005 (5E0H, b5)	Temporary error invalid station canceling request	Cancels the station which had been specified by SW0003 to SW0007 from temporary error invalid station. OFF : No request ON : Request	○	×
SB0048 (5E4H, b8)	Temporary error invalid station acceptance status	Indicates the acceptance status of the temporary error invalid station request instruction. OFF : Not executed ON : Instruction accepted	○	×
SB0049 (5E4H, b9)	Temporary error invalid station complete status	Indicates the acceptance complete status of the temporary error invalid station request instruction. OFF : Not executed ON : Temporary error invalid station confirmed	○	×
SB004A (5E4H, b10)	Temporary error invalid station canceling acceptance status	Indicates the acceptance status of the temporary error invalid station canceling request instruction. OFF : Not executed ON : Instruction accepted	○	×
SB004B (5E4H, b11)	Temporary error invalid station canceling complete status	Indicates the acceptance complete status of the temporary error invalid station canceling request instruction. OFF : Not executed ON : Temporary error invalid station canceling complete	○	×

(2) Special link registers (SW)

The link special registers (SW) relating to the temporary error invalid station specifying function are as follows. The figures in parentheses in the number column indicate buffer memory address.

Table 15.9 List of link special registers relating to temporary error invalid station specifying function

Number	Name	Description	Availability (○ : available, × : not available)																																																			
			Master station	Local station																																																		
SW0003 * (603H)	Multiple temporary error invalid station specification	Selects whether to specify multiple temporary error invalid stations. 00 : Specifies multiple stations as indicated in SW0004 to SW0007. 01 to 64 : Specifies a single station from 1 to 64. ※ Specifies the station number used as the temporary invalid station.	○	×																																																		
SW0004 * (604H) . SW0005 * (605H) . SW0006 * (606H) . SW0007 * (607H)	Temporary error invalid station specification * 1	Specifies the temporary error invalid station. 0: Not specified as a temporary error invalid station. 1: Specified as a temporary error invalid station. <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW0004</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW0005</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW0006</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW0007</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicate station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW0004	16	15	14	13	to	4	3	2	1	SW0005	32	31	30	29	to	20	19	18	17	SW0006	48	47	46	45	to	36	35	34	33	SW0007	64	63	62	61	to	52	51	50	49	○	×
	b15	b14	b13	b12	to	b3	b2	b1	b0																																													
SW0004	16	15	14	13	to	4	3	2	1																																													
SW0005	32	31	30	29	to	20	19	18	17																																													
SW0006	48	47	46	45	to	36	35	34	33																																													
SW0007	64	63	62	61	to	52	51	50	49																																													
SW0049 (649H)	Temporary error invalid station request result	Stores the results of execution of the temporary error invalid station request instruction by SB0004. 0 : Normal Other than 0 : Store error code (See Section 13.3)	○	×																																																		
SW004B (64BH)	Temporary error invalid station canceling request result	Stores the results of execution of the temporary error invalid station canceling request instruction by SB0005. 0 : Normal Other than 0 : Store error code (See Section 13.3)	○	×																																																		
SW007C * (67CH) . SW007D * (67DH) . SW007E * (67EH) . SW007F * (67FH)	Temporary error invalid station specifying status * 1	Stores the temporary error invalid station specifying status. 0: Other than temporary error invalid station 1: Temporary error invalid station <table><tr><td></td><td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>to</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr><tr><td>SW007C</td><td>16</td><td>15</td><td>14</td><td>13</td><td>to</td><td>4</td><td>3</td><td>2</td><td>1</td></tr><tr><td>SW007D</td><td>32</td><td>31</td><td>30</td><td>29</td><td>to</td><td>20</td><td>19</td><td>18</td><td>17</td></tr><tr><td>SW007E</td><td>48</td><td>47</td><td>46</td><td>45</td><td>to</td><td>36</td><td>35</td><td>34</td><td>33</td></tr><tr><td>SW007F</td><td>64</td><td>63</td><td>62</td><td>61</td><td>to</td><td>52</td><td>51</td><td>50</td><td>49</td></tr></table> 1 to 64 in the table indicate station numbers.		b15	b14	b13	b12	to	b3	b2	b1	b0	SW007C	16	15	14	13	to	4	3	2	1	SW007D	32	31	30	29	to	20	19	18	17	SW007E	48	47	46	45	to	36	35	34	33	SW007F	64	63	62	61	to	52	51	50	49	○	○
	b15	b14	b13	b12	to	b3	b2	b1	b0																																													
SW007C	16	15	14	13	to	4	3	2	1																																													
SW007D	32	31	30	29	to	20	19	18	17																																													
SW007E	48	47	46	45	to	36	35	34	33																																													
SW007F	64	63	62	61	to	52	51	50	49																																													

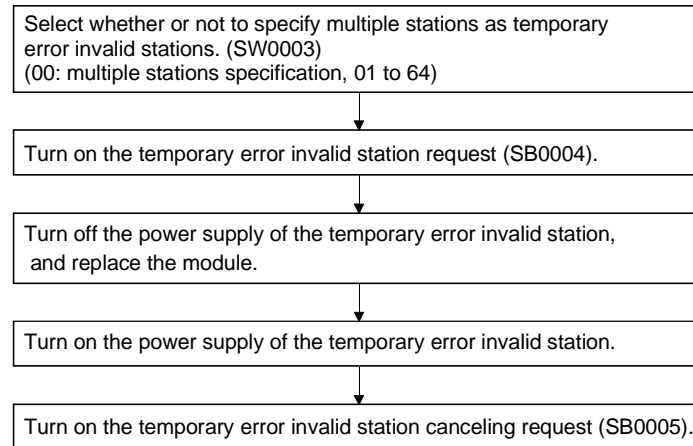
* 1 Turns on only the bit for the head station number.

POINT

- (1) If both a temporary error invalid station request and a temporary error invalid station canceling request are made, the temporary error invalid station canceling request will be given a priority.
- (2) For a station that occupies multiple stations, only the head station number becomes valid.

15.8.3 Execution procedure for the temporary error invalid station specification function

The execution procedure for the temporary error invalid station specification function is as follows:



16. Communication with the Intelligent Device (Function Version B or Later)

The method of communication between the master station and the intelligent device stations varies from intelligent device station to intelligent device station.

Refer to the applicable intelligent device station manual for the communication between the master station and the intelligent device stations.

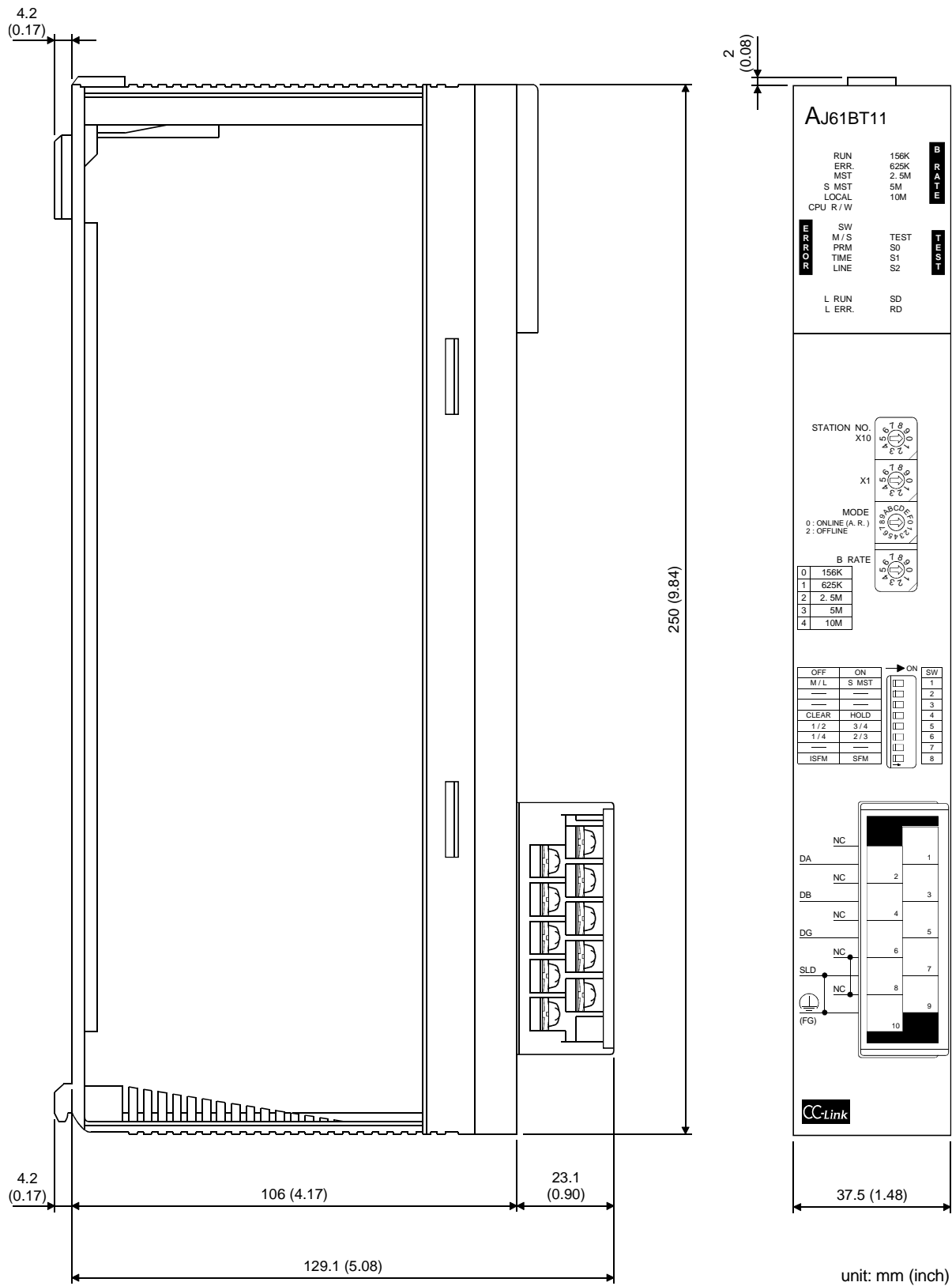
MEMO

[illegible]

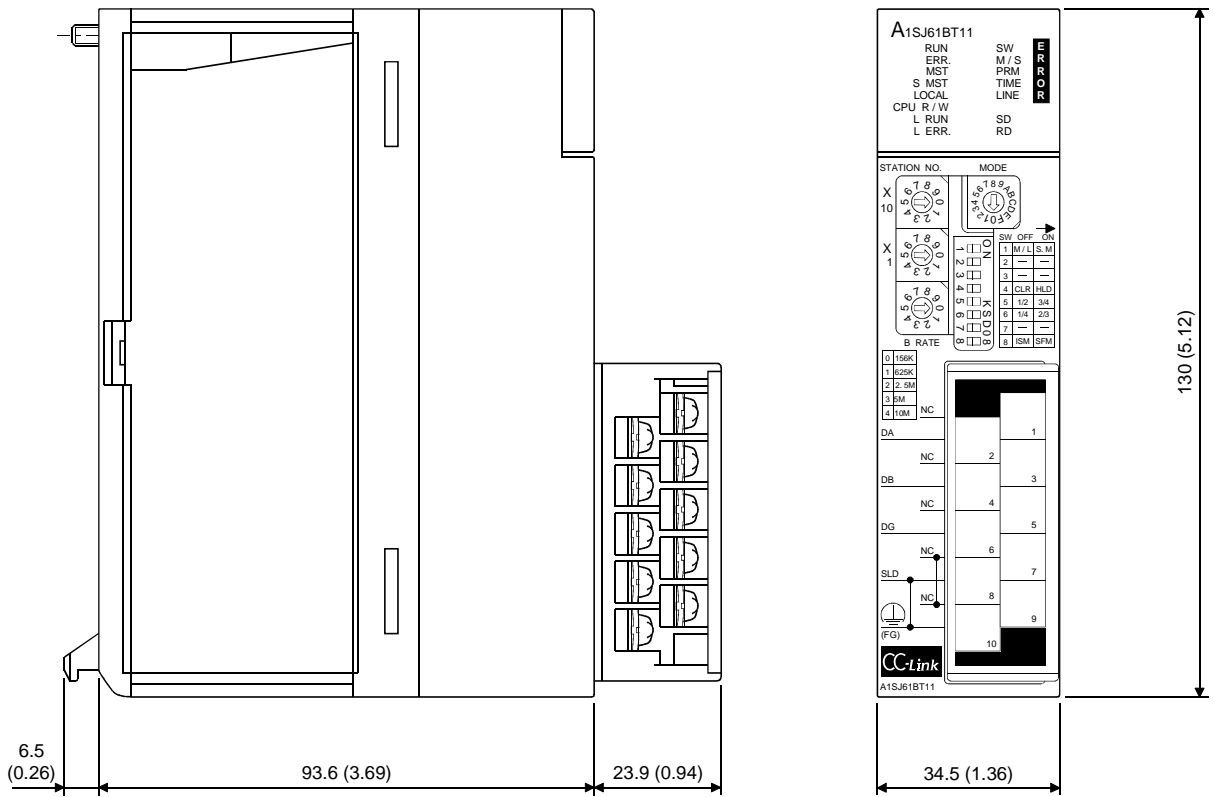
Appendix

Appendix 1 External Dimensions Diagram

1.1 AJ61BT11



1.2 A1SJ61BT11



unit: mm (inch)

Appendix 2 Parameter Setting Sheet

Item	Setting range	Buffer memory address	Remark	Default value	Setting value
Number of linked modules	1 to 64	1H	—	64	
Number of retries	1 to 7	2H	—	3	
Number of automatic return modules	1 to 10	3H	—	1	
Standby master station specification	0 to 64 (0: No specification)	4H	—	0	
Operation when CPU down	0: stop 1: continue	6H	—	0 (stop)	
Delay time setting	0 to 100 (0: No specification)	8H	—	0	
Reserved station specification	Turn on the corresponding bit for station to reserve.	10H	Station No. 16 to 1	0000H	
		11H	Station No. 32 to 17	0000H	
		12H	Station No. 48 to 33	0000H	
		13H	Station No. 64 to 49	0000H	
Invalid station specification	Turn on the corresponding bit for station to invalidate.	14H	Station No. 16 to 1	0000H	
		15H	Station No. 32 to 17	0000H	
		16H	Station No. 48 to 33	0000H	
		17H	Station No. 64 to 49	0000H	
Station information	b15 to b12 (station type) 0: remote I/O station 1: remote device station 2: intelligent device station, local station b11 to b8 (number of occupied stations) 1: occupies one station 2: occupies two stations 3: occupies three stations 4: occupies four stations b7 to b0 (station number) 01H to 40H (1 to 64)	20H	1st module	0101H	
		21H	2nd module	0102H	
		22H	3rd module	0103H	
		23H	4th module	0104H	
		24H	5th module	0105H	
		25H	6th module	0106H	
		26H	7th module	0107H	
		27H	8th module	0108H	
		28H	9th module	0109H	
		29H	10th module	010AH	
		2AH	11th module	010BH	
		2BH	12th module	010CH	
		2CH	13th module	010DH	
		2DH	14th module	010EH	
		2EH	15th module	010FH	
		2FH	16th module	0110H	
		30H	17th module	0111H	
		31H	18th module	0112H	
		32H	19th module	0113H	
		33H	20th module	0114H	
		34H	21th module	0115H	
		35H	22th module	0116H	
		36H	23th module	0117H	
		37H	24th module	0118H	
		38H	25th module	0119H	
		39H	26th module	011AH	
		3AH	27th module	011BH	
		3BH	28th module	011CH	

Item	Setting range	Buffer memory address	Remark	Default value	Setting value
Station information		3C _H	29th module	011D _H	
		3D _H	30th module	011E _H	
		3E _H	31th module	011F _H	
		3F _H	32th module	0120 _H	
		40 _H	33th module	0121 _H	
		41 _H	34th module	0122 _H	
		42 _H	35th module	0123 _H	
		43 _H	36th module	0124 _H	
		44 _H	37th module	0125 _H	
		45 _H	38th module	0126 _H	
		46 _H	39th module	0127 _H	
		47 _H	40th module	0128 _H	
		48 _H	41th module	0129 _H	
		49 _H	42th module	012A _H	
		4A _H	43th module	012B _H	
		4B _H	44th module	012C _H	
		4C _H	45th module	012D _H	
		4D _H	46th module	012E _H	
		4E _H	47th module	012F _H	
		4F _H	48th module	0130 _H	
		50 _H	49th module	0131 _H	
		51 _H	50th module	0132 _H	
		52 _H	51th module	0133 _H	
		53 _H	52th module	0134 _H	
		54 _H	53th module	0135 _H	
		55 _H	54th module	0136 _H	
		56 _H	55th module	0137 _H	
		57 _H	56th module	0138 _H	
		58 _H	57th module	0139 _H	
		59 _H	58th module	013A _H	
		5A _H	59th module	013B _H	
		5B _H	60th module	013C _H	
		5C _H	61th module	013D _H	
		5D _H	62th module	013E _H	
		5E _H	63th module	013F _H	
		5F _H	64th module	0140 _H	

MEMO

[illegible]

WARRANTY

Please confirm the following product warranty details before starting use.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the dealer or Mitsubishi Service Company. Note that if repairs are required at a site overseas, on a detached island or remote place, expenses to dispatch an engineer shall be charged for.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 1. failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 2. Failure caused by unapproved modifications, etc., to the product by the user.
 3. When the Mitsubishi product is assembled into a user's device, failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 7. Any other failure found to not be the responsibility of Mitsubishi or the user.

2. Onerous repair term after discontinuation of production

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not possible after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of chance loss and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to damages caused by any cause found not to be the responsibility of Mitsubishi, chance losses, lost profits incurred to the user by failures in Mitsubishi products, damages and secondary damages caused from special reasons regardless of Mitsubishi's expectations, compensation for accidents, and compensation for damages to products other than Mitsubishi products and other duties.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

- (1) In using the Mitsubishi MELSEC programmable logic controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable logic controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- (2) The Mitsubishi general-purpose programmable logic controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for each Japan Railways company or the Department of Defense shall be excluded from the programmable logic controller applications.

Note that even with these applications, if the user approves that the application is to be limited and a special quality is not required, application shall be possible.

When considering use in aircraft, medical applications, railways, incineration and fuel devices, manned transport devices, equipment for recreation and amusement, and safety devices, in which human life or assets could be greatly affected and for which a particularly high reliability is required in terms of safety and control system, please consult with Mitsubishi and discuss the required specifications.

Control & Communication Link System Master/Local Module type AJ61BT11/A1SJ61BT11 User's Manual

MODEL	A(1S)J61BT11-U-E
MODEL CODE	13J872
IB(NA)-66721-I(0210)MEE	



HEAD OFFICE : 1-8-12, OFFICE TOWER Z 14F HARUMI CHUO-KU 104-6212, JAPAN
NAGOYA WORKS : 1-14 , YADA-MINAMI 5 , HIGASHI-KU, NAGOYA , JAPAN

When exported from Japan, this manual does not require application to the
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Specifications subject to change without notice.